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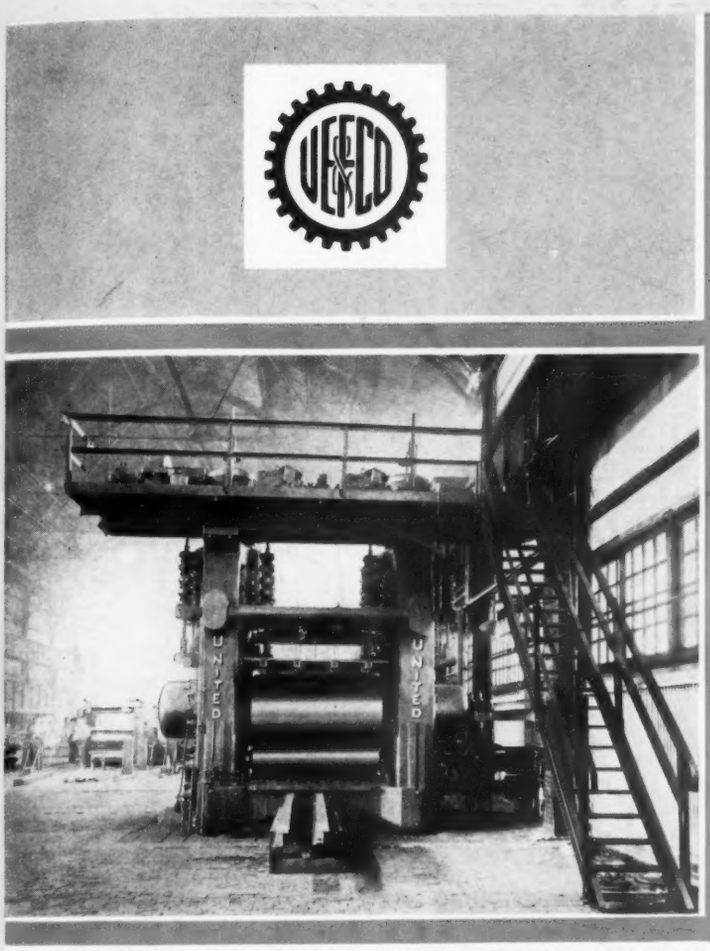
October 2, 1930



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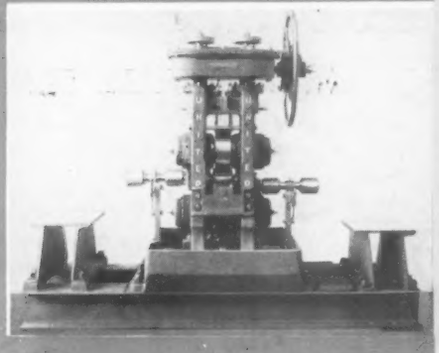

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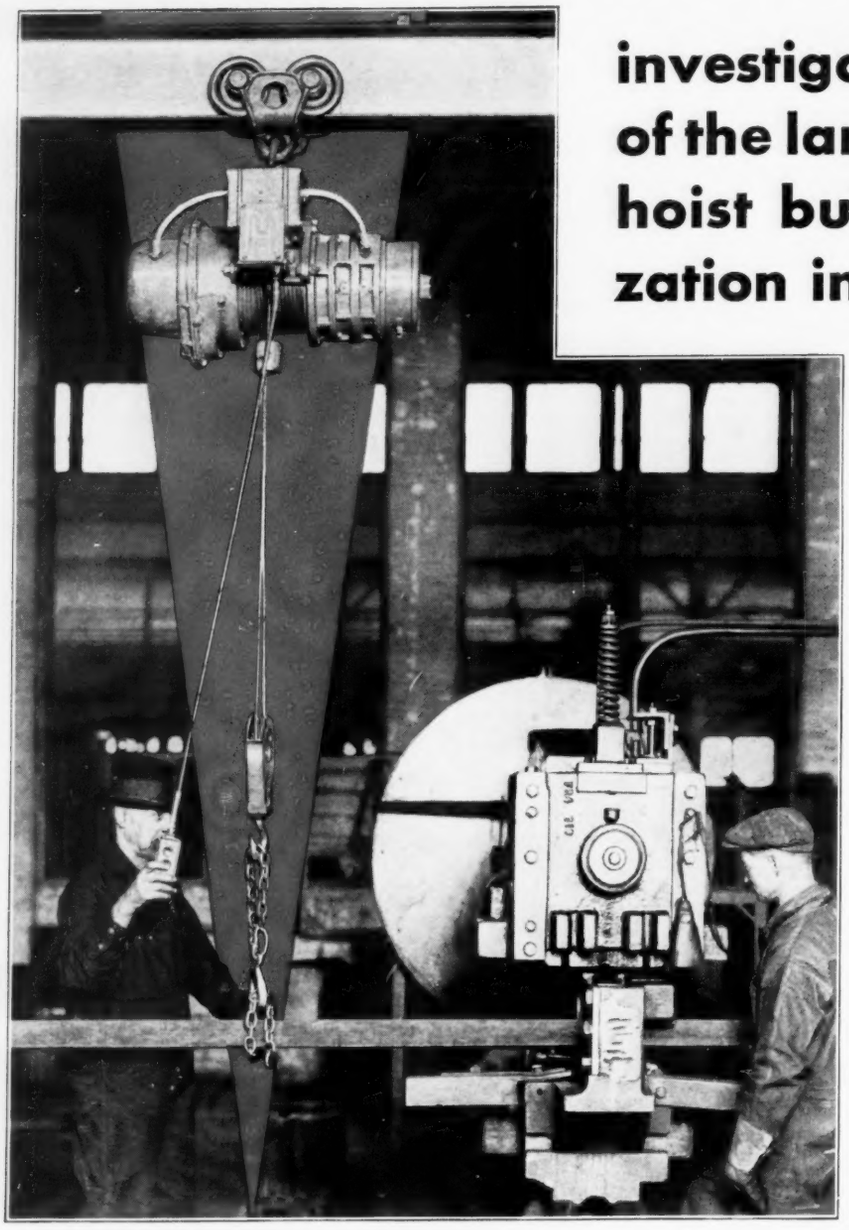

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PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

Industrial Exhibit Held in Sumptuous Hotel. Page 45.

THIS WEEK:

THIS issue features reports of the twelfth National Metal congress and exposition in Chicago, Sept. 22-26, notable for an attendance of 6000, and 200 exhibitors, in an "off" business year. A general summary of the news will be found on page 23, while the technical sessions and description of the exposition are covered on pages beginning with 43—in all 11 pages devoted to the event, of interest to the American Society for Steel Treating; American Welding society; American Institute of Mining and Metallurgical Engineers, and American Society of Mechanical Engineers.

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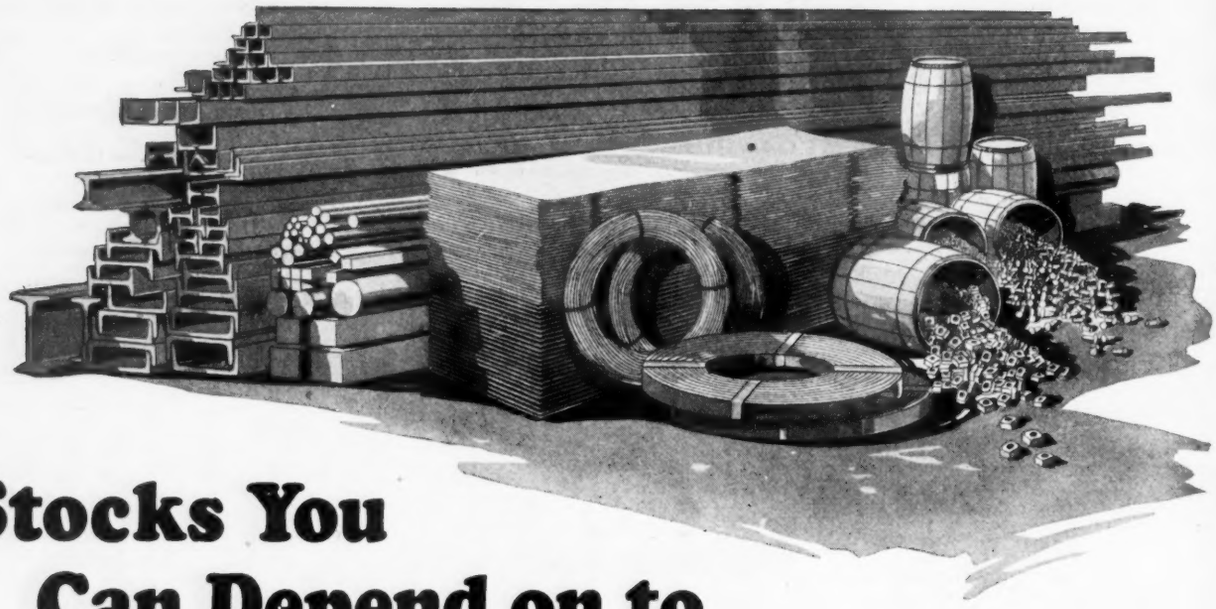

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Volume 87 Number 14

STEEL

For forty-eight years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

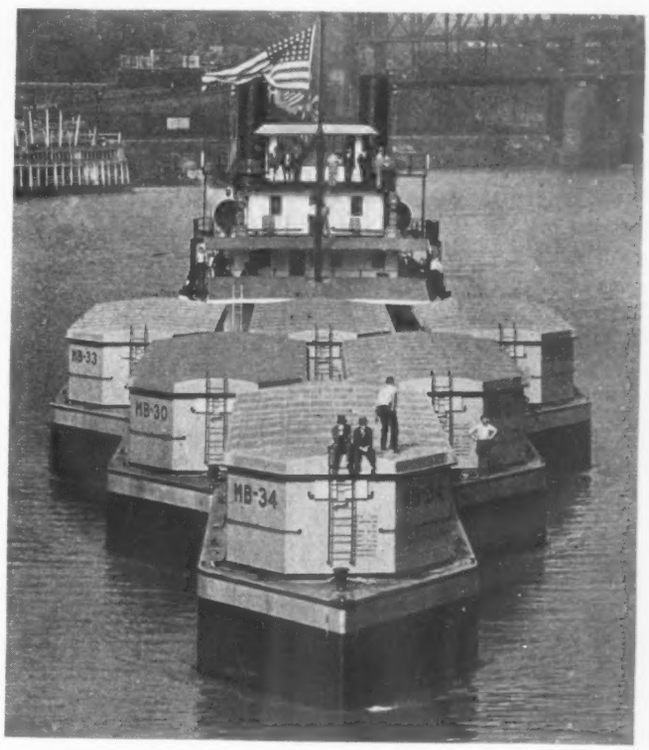
IS THE American nation overstriving for perfection? Six thousand attend the National Metal congress and exposition in Chicago, eager for every word, every sign of technical progress in the making and use of steel, while at home the president of a scientific school, starting his classes, declares human ingenuity resulting in too prolific production of commodities is one of the main causes of unemployment and distress. European industrial nations are seeking to emulate the United States and catch the spirit of its prosperity, while a banker speaking to the American Bankers' association in Cleveland declares the American standard of living is too high, that our immigration and tariff policies are wrong, in giving us too great an advantage over the remainder of the world. The Metal congress (Page 23) in a practical sense represents the American industrial urge for those conditions which permit of low prices, high wages, and a fair return to investors. It is difficult to see how it can be stopped. . . . The long trend for steel is unmistakably upward; for every year in the past quarter century in which a decline in production has occurred there have been two in which increases have been registered. Every indication points to an output of more than 75,000,000 tons by 1940. Only three times in history—1926, 1928 and 1929—has the probable ingot output for 1930 been exceeded by an appreciable margin, and this is considered a "poor" year in production (Page 35).

Soviet Wizard of High Finance?

Leaders of Soviet Russia are receiving considerable condemnation and credit for possessing financial finesse in manipulating American and foreign grain markets, but less is known about how they manage to make a paper profit of $45.62 on a ton of manganese selling in this country at $12.50. Yet a former American commercial attache in Russia endeavors to explain it for the American Manganese Producers' association, seeking higher duties on the Russian product it claims is "dumped." They appear to accomplish it by a clever system of converting dollars to rubles, and rubles to dollars, in between taking the liberty of issuing additional treasury notes on increased credit (Page 31). . . . The British "muddle through" in a more prosaic manner. An eminent Briton, head of the Middlesbrough district employment committee, suggests the government issue credits to the steel industry, enabling it to get on its feet, giving immediate employment to the idle, thereby reducing the doles a commensurate sum (Page 31).

Export Steel Trade Turns Up

Economists who said July marked the bottom of the business depression can add this to



All-steel barges of new design are being built for river service. Ends are wedge shape so a large number can be nested together in one tow. Steel towboats, driven by propellers instead of paddle-wheels, also are being constructed.

facts tending to support their conclusion: Iron and steel exports increased in August, after dropping steadily for four consecutive months. The gain over July was decisive, 14.8 per cent, raising the total for the month to 151,235 tons. It is possible the Canadians, who took 40 per cent of that tonnage, anticipated the tariff wall the dominion government erected against the United States, effective Sept. 17, though there was nothing conclusive about it in August, and ordinarily nine-tenths of their iron and steel imports come from the United States. This, now, is the jumping off place; the September and October figures will disclose what the new tariff has done to us (Page 26). . . . Iron and steel imports into the United States in August continued to fall to the lowest point since July, 1924. The principal product imported was pig iron, of which there was 8747 tons. President Hoover has reappointed Lincoln Dixon, Democrat, Illinois, as the sixth member of the reorganized tariff commission, and the chairman announces a hearing Oct. 20 for the American pig iron producers, to see what can be done about that. Manufacturers of woven wire fencing and wire netting will be heard Nov. 5 (Page 24).

Industrial Force Like an Army

Unemployment has not disrupted industrial organization. The number of employes on payrolls of the United States Steel Corp. in the first six months of this year is reported as 220,591, only 1.9 per cent less than the average for all of 1929. This is further evidence employment is being distributed. The "force" is operating like a well trained army; when work is slack the men alternate on furloughs. Wage rates steady, "ownership" of a job steady, the employe's mind at rest, and he does not become agitated over loss of "time." Contrast this with conditions 20 years ago (Page 24). . . . The Steel corporation's assets increase by $109,882,000 to the sum of $2,396,066,000 in the first six months of 1930, as revealed in the same report, making application to list 225,790 additional shares of common stock. The approval by the New York stock exchange, granted, means half the proceeds of the sale will be used to acquire additional property, the Oil Well Supply Co., coupling large manufacture of steel pipe and other oil industry supplies with production of equipment and machinery, for world-wide distribution (Page 25). . . . The Steel corporation, of course, retains its lead, with Bethlehem second, in the latest revised table of steel ingot capacities. Republic Steel Corp. is third, in place of Jones & Laughlin, which remains ahead of Youngstown Sheet & Tube. National Steel Corp. is eighth (Page 24). . . . In the record for words, the Bethlehem-Sheet & Tube merger case takes first rank in modern industrial litigation. Now that it is all over, except oral arguments, set for Oct. 20, the 7842-page transcript of testimony is estimated to contain 1,764,000 words (Page 111).

Automotive Color Scheme Blue

With Ford curtailing to a three-day work week and assembling few more than 4000 units daily, automotive executives selling automobile stocks "short," Oakland-Pontiac closing for most of October and a majority of other manufacturers retrenching—no wonder Detroit is feeling blue (Page 32). For the long pull, however, there is no lack of confidence nor stinting of expenditures for refurbishing models. Reo is bringing out a rakish eight, Nash introduces new eights shortly, the formal debut of the Cadillac V-12 nears, Hudson plans to recapture its large repeat clientele, Chevrolet is releasing material for its 1931 line. . . . Not until there is a brisk automobile market will the full significance of Detroit's progress toward setting up a steel industry be realized. The sheet mill in Detroit is completing its reconstruction program which not only increases its capacity 30 per cent but also diversifies its products (Page 33). The newly-completed second mill in Detroit is already rolling sheet bars and strip, has foundations in for a second bar mill, last week took its first hot metal direct from the Hanna furnaces for the two open-hearth furnaces now on. Ford's open-hearth department has resumed.

Working and Manufacturing for Safety

The National Safety council's nineteenth annual congress brings 10,000 safety "professionals" to Pittsburgh, welcomed by the steel industry which pioneered industrial safety. One out of 12 persons in this country are injured every year, and of the 97,000 accidental deaths 31,000 are ascribed to motor vehicles (Page 24). . . . The "overgrown thumbtacks" driven into pavements to mark traffic lanes are in great demand, a large tonnage of steel and nonferrous alloys being consumed in their production (Page 54). . . . The American Electrochemical society meeting in Detroit gives special attention to the corrosion problem in automotive materials (Page 68). . . . Hardening under cold working in service is a unique property of manganese steel. While manganese steel castings compared with those of alloy steel give a higher abrasive factor this resistance value is a poor basis on which to purchase either grade (Page 71). . . . Improvement in the iron and steel markets continues, but somewhat more mildly than in recent weeks. Normal fourth quarter buying of track materials is expected to provide some stimulus (Page 91).

National Metal Week Exceeds Expectations

DESPITE conditions which have marked 1930 as a year of industrial depression, the Twelfth National Metal congress and exposition held in the Stevens hotel, Chicago, Sept. 22-26, made a remarkable showing, one which compared favorably with those of recent years. Actual registrations during the five days totaled somewhat over 6000 and technical sessions of all participating groups were well attended. Likewise, the exposition proved a busy one for the 200 exhibitors and reports of business transacted and prospects accumulated were to be had on every hand.

All Under One Roof

The congress and exposition just concluded were of more than usual interest because for the first time were technical meetings and exhibits housed under one roof. Facilities for meetings were ample, but for the show it was necessary to arrange displays in a somewhat rambling fashion on two floor levels. On the other hand, proximity of the show to technical sessions and hotel accommodations proved a distinct advantage.

Organizations taking part in the congress were the American Society for Steel Treating; American Welding society; iron and steel and institute of metals divisions of the American Institute of Mining and Metallurgical Engineers; and iron and steel and machine shop practice divisions of the American Society of Mechanical Engineers. In addition, the International Railroad Master Blacksmiths' association and Blacksmiths' Supply association held simultaneous conventions.

As announced in the Sept. 25 issue of STEEL, J. M. Watson, metallurgical engineer, Hupp Motor Car Corp., Detroit, was nominated for president of the Steel Treaters for 1931. Also it was announced that the Thirteenth National Metal congress and exposition will be held in Boston, Sept. 21-25, 1931.

J. M. Watson
Nominated for president of the American Society for Steel Treating in 1931

H. J. French
Awarded Henry Marion Howe medal of the American Society for Steel Treating

Medals Are Awarded

At the annual business meeting of the society on Wednesday morning, H. J. French, metallurgist, development and research department, International Nickel Co., Bayonne, N. J., was awarded the 1930 Henry Marion Howe gold medal for the best technical paper published in *Transactions* during the year. The paper winning this award was "A Study of the Quenching of Steels," a 173-page contribution published in the May and June, 1930, issues.

For service rendered as president of the society in 1929, Dr. Zay Jeffries, consulting engineer, Cleveland, was presented with the Past President's medal. The Newark, N. J., chapter was awarded the R. M. Bird bell and gavel for the coming year in recognition of that group's notable progress in its existence of two years.

W. H. Eisenman, secretary of the society was authorized by the board of directors to co-operate with H. Foster Bain, secretary, American Institute of Mining and Metallurgical Engineers, in arranging the reception of the British Iron and Steel institute and British Institute of Metals when they visit this country in September, 1932, to participate in a meeting with the American Iron and Steel institute. The visitors from abroad will visit several cities in the United States, including Washington and Pittsburgh, and will spend two days at the National Metal congress in a city not yet designated.

Name 1931 Lecturer

Announcement was made that C. H. Herty Jr., metallurgist, United States bureau of mines, Pittsburgh, had been named Campbell Memorial lecturer for the 1931 convention, thereby again recognizing the younger group of research workers in the society.

Over 350 attended the Steel Treaters banquet on Thursday evening at which the only speaker was Capt. Irving O'Hay, New York, humorist and "Soldier of Fortune." Some 250 members of the American Society of Mechanical Engineers attended a dinner on Wednesday evening, upon which occasion, F. H. Willcox, vice president, Freyn Engineering Co., Chicago, made an address on Russia.

The annual banquet of the American Welding society was served Thursday evening to over 300 and the speaker was C. D. Morris, assistant to the chairman, Western Railroads Committee on Public Relations, Chicago.

A feature of the banquet was the awarding of the Samuel Wylie Miller medal of the Welding society to James W. Owens, for his many contributions to the advancement of the art of fusion welding. Mr. Owens is engineering director, Welding Engineering & Research Corp., New York.

J. W. Owens
Awarded Samuel Wylie Miller medal of the American Welding Society

Corporation and Bethlehem Retain Ingot Capacity Lead

ADDITIONS and improvements to open hearths as well as the resultant effect of mergers among the 15 leading steelworks have led to revised ingot-capacity ratings for 1930.

Unchanged in position are both the United States Steel Corp. and Bethlehem Steel Corp., but the entrance of Republic Steel Corp. among the leaders has edged Jones & Laughlin Steel Corp. and Youngstown Sheet & Tube Co. back a point from their rank of last year.

Republic, formed late in 1929 from Republic Iron & Steel Co. and Central Alloy Steel Corp. among 1929's first 15 producers, and others, has stepped into third place with an ingot capacity of almost 5,000,000 tons yearly.

Entry of National Steel

National Steel Corp., likewise the result of a merger of existing subsidiaries in 1929 and the newly-constructed plant of Great Lakes Steel Corp., has taken an eighth-place position with ingot content in Great Lakes and Weirton Steel Co. amounting in aggregate to a maximum of 1,850,000 tons.

New open-hearth construction on the part of Illinois Steel Co. and National Tube Co. for the Steel corporation, by Bethlehem Steel Corp., National Steel Corp., and Wisconsin Steel Co. have as well altered the 1929 picture. Likewise enlargement of existing open hearths by several producers has played its part in changes as noted in the accompanying table.

Ingot Producers in Revised Rating

1929 Rating		1930 Rating		Rank change from 1929-1930
(1) U. S. Steel Corp.	24,201,500	(1) U. S. Steel Corp.....	26,409,400‡†	Unchanged
(2) Bethlehem Steel	8,000,000	(2) Bethlehem Steel	9,820,000‡	Unchanged
(3) Jones & Laughlin	3,270,000	(3) Republic Steel*	4,806,000(1)	
(4) Youngstown S. & T.	2,717,000	(4) Jones & Laughlin..	3,420,000	3rd to 4th
(5) Republic I. & S...	2,160,000	(5) Youngstown S. & T.	3,240,000	4th to 5th
(6) Inland Steel Co...	1,800,000	(6) Inland Steel Co.	2,000,000	Unchanged
(7) American R. M.	1,557,500	(7) American Roll. M.	1,876,705	Unchanged
(8) Central Alloy	1,542,000	(8) National Steel*	1,850,000‡(2)	
(9) Wheeling Steel ..	1,500,000	(9) Wheeling Steel	1,614,640	Unchanged
(10) Weirton Steel	1,250,000	(10) Corrigan, McKin...	1,140,000	12th to 10th
(11) Colo. Fuel & Iron	1,200,000	(11) Otis Steel Co.	990,000	13th to 11th
(12) Corrigan, McKin.	1,000,000	(12) International Harv. (Wisconsin Steel)	922,000‡	15th to 12th
(13) Otis Steel Co.	890,000	(13) Colo. Fuel & Iron..	898,000	11th to 13th
(14) Lukens Steel Co.	700,000	(14) Pittsburgh Steel	720,000	16th to 14th
(15) International Harv. (Wisconsin Steel)	670,000	(15) Lukens Steel Co....	686,500	14th to 15th

*Denotes entry of new steelmaking combination into field.
‡Capacities revised by new construction in 1930.
(1) Included are companies of (5) and (8) rank in 1929.
(2) Included is company (10) in 1929 rating.
†Exclusive of National Tube Co. 1930 expansion.

Canadian Iron and Steel Output Drops

Toronto, Ont.—Production of pig iron in Canada during August, amounting to 57,459 long tons, was the lowest for any month of the year to date. It was about one half of the total produced in August 1929. Production in the first eight months this year was 573,321 tons, compared with 730,831 tons in the corresponding period last year, a decline of 22 per cent.

Output of steel ingots and direct steel castings in August amounted to 57,626 tons, compared with 68,424 tons for July, and less than one-half the total of 120,282 tons made in August 1929. For eight months production was 755,043 tons, 24 per cent less than last year.

Tariff Board Complete; Pig Iron Hearing Oct. 30

Washington—Henry P. Fletcher, chairman of the reorganized tariff commission, has announced that a hearing will be held Oct. 30 in connection with the commission's investigation into the duty on pig iron. Nov. 5 a hearing will be held on woven wire fencing and wire netting.

The commission is now working on its rules of procedure. At this time it has not been determined whether the new commission will follow the procedure of the old commission. Experts of the old commission are continuing their work but it has been indicated that additional personnel may have to be employed to get quicker decisions.

President Hoover has completed the personnel of the commission by appointing Lincoln Dixon, Democrat, North Vernon, Ind., as the sixth and final member. Mr. Dixon was formerly a member of congress. He was appointed to the old tariff commission in 1927 by the President and has held office since.

Corporation's Employes Reduced Only 1.9 Per Cent

A decrease of only 1.9 per cent in the average number of workers employed in the first six months of 1930 by the United States Steel Corp., compared with the average for all of 1929 is shown by a statement issued by Myron C. Taylor, chairman of the corporation's finance committee. The average number employed in the first half was 220,591, compared with 224,980, the average last year. Mr. Taylor says:

"The policy of this corporation, as we have undertaken to develop and define it and particularly since the recession in business last fall, is to equitably distribute the work as near as possible among the workers, hoping through this system to provide under all circumstances a ratable portion of work that is going for our own work people, and thus far this plan has been effective."

Safety Congress Opens; Industries Are Praised

Pittsburgh—Industries are achieving "wonderful results" in safety work, while highway accidents are increasing, C. E. Pettibone, president, told members of the National Safety council at the opening of their nineteenth annual congress here Monday.

"The 1929 accident death rate per 100,000 population was about 79.9," he said. "There were 97,000 deaths —10,000,000 people injured. The increase did not occur in industry, or in the homes; and we know that in the school age group fatalities decreased 11 per cent last year. We all know that the cause of our greatest concern in the accident problem is the motor vehicle. Thirty-one thousand deaths were caused by this single type of instrument."

Steel Corp.'s Assets Gain; Dividend Payments Mixed

UNITED STATES STEEL CORP., and subsidiaries, had total assets of $2,396,066,088 as of June 30, compared with $2,286,183,654 on Dec. 31, 1929. The figures were disclosed in the Corporation's listing 225,790 additional shares on the New York Stock Exchange, approximately half of which will be used in acquisition of business, properties and assets of Oil Well Supply Co.

The total increase in fixed property investments over the six months was $105,022,384 of which $44,952,086 represents cost of acquirement of the fixed properties of Atlas Portland Cement Co., and Columbia Steel Corp. Included likewise in the Corporation's report as of June 30 were approximate reduction of $14,000,000 in current liabilities; increase of $48,000,000 in working capital; increase of $14,000,000 in accounts and bills receivable; and decrease of $6,000,000 in inventories.

Newton Steel Co., Newton Falls, O., directors have omitted the quarterly dividend of 50 cents a share on common stock due at this time. Regular quarterly dividend of $1.50 for the preferred has been declared payable Oct. 31 to record of Oct. 15. Negotiations are being continued for a merger of Newton Steel Co. with Corrigan, McKinney Steel Co., Cleveland.

Sharon Steel Hoop Co., Sharon, Pa., directors omitted quarterly dividend now due of 25 cents a share on common stock.

Pittsburgh Steel Co., Pittsburgh, reports a net profit of $1,689,692 for the year ended June 30, equal after preferred dividends to $3.77 a common share. This compares with earnings of $4,535,437, or $15 per share in the previous fiscal year. Deficit after dividends of $57,558 contrasts with surplus of $3,041,687 in the previous year.

Republic Steel Corp., Youngstown, O., has omitted action on the common dividend. A statement by Tom M. Girdler, president, attributes this to heavy organization expense involved in the merger and to severe recession in trade. The outlook is considered favorable, completion of the new electric welding pipe mill and other betterments, costing $10,000,000, improves the corporation's position as business revives.

Morgan Engineering Co., Alliance, O., designers and engineers of heavy and special machinery, will place before its stockholders at a special meeting Oct. 21 proposal to pay off its creditors and restore the company to home management. The company was placed in the hands of a creditors' committee in November, 1926.

Youngstown Sheet & Tube Co., Youngstown, O., estimates its net earnings for third quarter at $2 or more per share of common stock, exceeding the quarterly dividend requirement of $1.25. For first quarter $1.92 was earned and $2.17 in the second.

A. O. Smith Corp., Milwaukee, maker of steel automobile frames and electrically-welded steel pipe, in its annual report shows net income for the fiscal year ended July 31, 1930, of $5,425,649 after all charges. This compares with net income of $7,308,962 in the previous fiscal year.

Allegheny Steel Co., Brackenridge, Pa., declared an extra dividend of 25 cents a share on common stock in addition to three regular monthly dividends of 15 cents each. In April and July of this year similar extras were paid.

Railroad Buying Spurts

Philadelphia—Seaboard Air Line, Atlantic Coast Line, Western Fruit Growers' Express and the Virginian railroads are inquiring for indefinite tonnages of sheets, bars and miscellaneous requirements for fourth quarter. Railroads in this territory have opened up slightly in their purchases and have specified round tonnages of plates, bars and other steel products during the past week, which easily looms as the best week in some time from the standpoint of railroad purchasing.

Corporation To Buy Maker of Pipe Couplings?

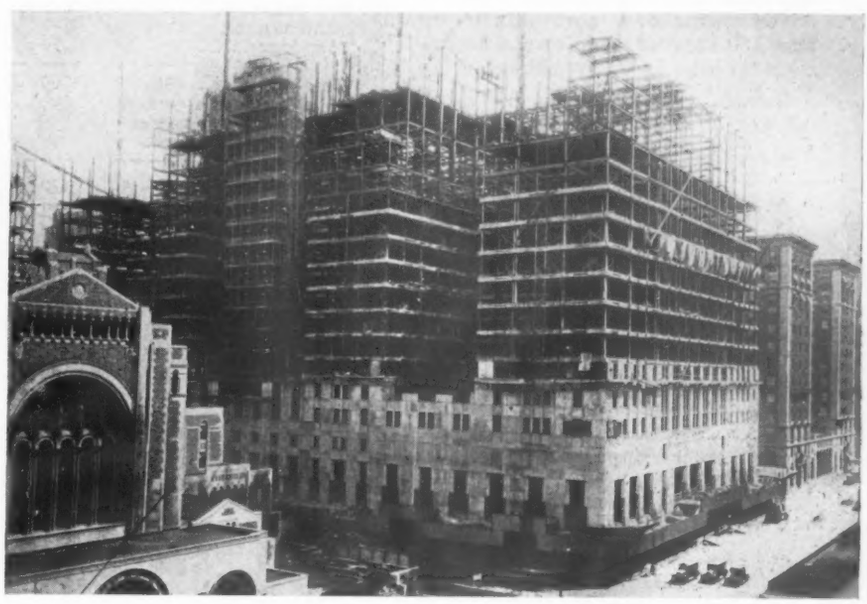
Negotiations are understood under way between the Dresser Mfg. Co., Bradford, Pa., manufacturer of pipe couplings, and other interests who seek control of the company. The Dresser company's product is used extensively on pipe lines. United States Steel Corp., which recently acquired the Oil Well Supply Co., is mentioned among others interested in acquisition of the Dresser company.

Will Discuss Ore Dumping

Washington—Third annual convention of the American Manganese Producers' association will be held here Nov. 10 and 11. The question of alleged dumping of Russian manganese ore will be taken up in detail.

Algoma Rail Mill Resumes

Sault Ste. Marie, Ont.—Algoma Steel Corp. will resume operations at its rail mill, single turn, Oct. 10 or 15, according to W. C. Franz, president. The company has closed a rail contract of sufficient tonnage to maintain operation until December.



THIS STEEL ALSO WILL OUTLAST THE BUILDING

Steel shapes taken from the Waldorf-Astoria hotel, New York, after 39 years of service, revealed less than 1 per cent corrosion in areas most exposed, and practically none where there was no exposure. The illustration shows the new Waldorf-Astoria under construction, in which 27,100 tons of steel is being fabricated. It will be the tallest hotel in the world

August Exports Rise at Good Pace but Imports Fall

FOLLOWING a four-months' steady decline, export trade of the United States in iron and steel products turned sharply upward in August. The gain was 19,463 tons and the month rose to 151,235 tons. While higher by 14.8 per cent than July, this figure does not approach the June level. The month's increase was marked by strong increases in 60 per cent of the classes of products exported, and considered in the light of trade with world areas substantial gains were recorded for every division except North and Central America where slight declines were shown, according to the iron and steel division of the department of commerce, Washington.

Canada was the largest individual market of the month taking in all 59,141 tons of ferrous products from this country, chief of which were tin plate, plain shapes, scrap and skelp. Now, however, her strong protective tariff is operative and it will be interesting to see how large she shares in United States exports when the September total is compiled and if then she will be our largest customer.

At only 35,387 tons, imports of iron and steel products into the United States were, during August, at their lowest level for any month

IMPORTS AND EXPORTS

Gross Tons

	—1930—		—1929—	
	Imports	Exports	Imports	Exports
Jan.	42,314	225,090	54,793	274,296
Feb.	43,351	197,426	58,146	259,711
Mar.	55,604	238,333	52,747	270,925
April	52,650	208,640	54,337	277,580
May	52,814	196,120	74,272	261,516
June	48,955	159,392	63,635	247,811
July	39,700	131,772	71,378	270,532
Aug.	35,387	151,235	83,969	242,856
Total (8 mos.)	370,775	1,508,008	513,277	2,105,227
Sept.	.....	.....	60,974	222,408
Oct.	.....	.....	63,226	247,646
Nov.	.....	.....	54,041	241,829
Dec.	.....	.....	47,486	215,242
Total	.....	.....	739,004	3,032,352

ORIGIN OF AUGUST IMPORTS

Gross Tons

	Steel Ingots, Blooms	Steel Scrap	Cast Iron Pipe	Steel Bars
Austria	.....	.....	.....	3
Belgium	916	.....	.....	1,008
Canada	8	1,001	2	1
Czechoslovakia	.....	.....	.....	27
France	245	.....	26	175
Germany	54	5	.....	841
Italy	.....	.....	.....	10
New Zealand	.....	505	.....	.....
Norway	2	.....	.....	.....
Sweden	66	.....	.....	457
United Kingdom	4	.....	.....	182
Total	1,295	1,511	28	2,704

IMPORTS OF IRON AND STEEL PRODUCTS

Gross Tons

Item	August 1930	July 1930	August 1929
Pig iron	8,747	9,756	12,377
Sponge iron	.....	75	
Ferromanganese and spiegeleisen (1)	2,236	5,020	9,021
Ferrochrome (2)	.....	18	92
Ferrosilicon (3)	84	187	1,124
Scrap	1,511	2,343	12,033
Steel ingots, blooms, billets, etc.	1,295	2,507	2,639
Concrete reinforcement bars	1,747	849	3,778
Hollow bar and drill steel	126	77	
Merchant steel bars	2,704	3,490	
Iron slabs	2	.....	
Iron bars	49	24	175
Wire rods	317	485	1,369
Boiler and other plate	5	51	362
Sheets, skelp and saw plate	2,927	1,007	3,090
Tin plate	24	40	35
Structural shapes	5,297	6,514	15,695
Sheet piling	.....	.....	
Rails and rail fastenings	2,139	436	1,517
Cast iron pipe and fittings	28	1,734	8,397
Welded pipe	1,145	505	2,866
Other pipe	1,489	358	
Barbed wire	461	388	727
Round iron and steel wire	297	272	322
Flat wire, strip	60	52	224
Wire rope, strand	145	179	175
Hoops and bands	1,734	2,375	7,224
Nails and tacks and staples	636	611	993
Castings and forgings	70	76	174
Total	35,387	39,700	84,506

(1) Manganese content.
(2) Chromium content.
(3) Silicon content.

DESTINATION OF AUGUST IRON AND STEEL EXPORTS

Gross Tons

	Galv. steel sheets	Tin terne plate	Black sheets	Steel bars
Argentina	208	734	.....	4
Brazil	231	295	19	8
Canada	749	9,620	4,404	1,659
Chile	16	285	2	450
China	35	782	57	63
Columbia	328	258	10	25
Cuba	363	440	40	160
Dutch East Indies	276	403	10	.....
France	.....	.....	10	12
Italy	.....	389	10	.....
Japan	184	129	444	455
Java	145	718	1	16
Mexico	268	694	228	57
Norway	101	.....	25	11
Panama	139	1	1	41
Philippines	1,427	1,101	617	195
Peru	141	533	13	371
United Kingdom	21	33	310	977
Uruguay	53	1	34	3
Venezuela	135	1	2	11
Total	5,219	21,950	6,537	4,840

EXPORTS OF IRON AND STEEL PRODUCTS

Gross Tons

Item	August 1930	July 1930	August 1929
Pig iron, not including ferroalloys	765	453	2,251
Ferromanganese and spiegeleisen	1,077	216	204
Scrap	18,607	14,731	62,857
Ingots, blooms, etc.	165	317	3,407
Iron bars	338	122	118
Steel bars	4,840	4,684	11,962
Alloy steel bars	291	145	449
Wire rods	3,179	2,266	2,969
Plates	6,799	7,874	13,924
Skelp	7,925	9,698	14,962
Iron sheets, galvanized*	566	555	.....
Steel sheets, galvanized*	5,219	7,325	11,079
Steel sheets, black	6,537	7,038	16,147
Iron sheets, black	909	1,097	1,664
Hoops, bands and strip steel	2,196	2,186	4,759
Tin plate, terneplate, etc.	21,950	17,921	21,367
Structural shapes, and fabricated	10,294	11,932	21,639
Structural shapes, fabricated	8,553	6,494	12,638
Tanks, complete and knocked down†	3,097	1,605	.....
Metal lath	325	412	387
Steel rails	18,298	8,413	12,926
Rail fastenings, switches, frogs, etc.	2,409	1,472	2,851
Boiler tubes	929	765	1,391
Casing and oil line pipe	4,157	3,237	7,847
Malleable-iron screwed pipe fittings	715	680	833
Cast-iron screwed pipe fittings	549	435	784
Cast-iron pressure pipe and fittings	646	1,434	440
Cast-iron soil pipe and fittings	659	717	508
Black and galvanized welded wrought-iron pipe*	1,258	934	.....
Black & galvanized welded steel pipe*	7,985	5,743	11,497
Plain wire	1,708	1,815	2,983
Barbed wire and woven wire fencing	2,127	3,552	4,001
Woven wire screen cloth	214	161	148
Wire rope	306	294	576
Insulated wire and cable, iron & steel	21	23	41
Other wire and manufactures	511	640	970
Wire nails	816	844	733
Nails, other than wire	429	402	821
Tacks	30	31	51
Bolts, nuts, rivets, etc. except railway	758	821	1,589
Iron castings	417	356	442
Steel castings	845	729	868
Car wheels and axles	1,047	382	1,104
Horseshoes	57	8	32
Forgings	712	813	964
Total	151,235	131,772	257,183

*Combined prior to 1930.
†Included in a miscellaneous classification prior to 1930.

ORIGIN OF AUGUST IRON AND STEEL IMPORTS

Gross Tons

	Iron Ore	Pig Iron	Manganese	Ferro-mang.
Algeria and Tunis	31,550	.....	.....	.....
Australia	9,230	.....	.....	.....
Belgium	.....	100	.....	.....
Brazil	.....	.....	2,545	.....
Brit. India	.....	7,746	.....	.....
Canada	120	.....	25	889
Chile	105,765	.....	689	.....
Gold Coast	.....	.....	2,557	.....
Italy	.....	.....	.....	21
Japan	.....	102	.....	.....
Netherlands	.....	160	.....	.....
Newfoundland	9,740	.....	.....	.....
Norway	.....	50	.....	174
Soviet Russia in Europe	.....	.....	1,955	.....
Spain	4,500	.....	.....	.....
Sweden	17,266	589	.....	.....
United Kingdom	.....	.....	.....	1,152
Totals	178,171	8,747	7,771	2,236

DESTINATION OF IRON AND STEEL EXPORTS

Gross Tons

Country	August 1930	July 1930	August 1929
North and Central America & West Indies	74,118	76,766	123,601
Canada and Newfoundland	59,876	60,994	103,298
Cuba	4,545	3,436	4,448
Guatemala	301	567	436
Honduras	377	592	434
Mexico	4,464	7,026	8,928
Panama	2,088	2,001	1,867
Salvador	131	98	652
British West Indies	1,108	890	638
Other West Indies	842	886	2,159
Other Central America	386	276	741
South America	30,654	20,739	26,121
Argentina	2,069	5,404	5,151
Brazil	1,775	5,011	5,160
Chile	16,910	3,300	4,396
Colombia	1,660	1,530	3,493
Peru	1,990	1,534	2,258
Uruguay	1,889	1,920	366
Venezuela	3,016	1,774	3,545
Other South America	1,345	266	752
Europe	9,263	6,957	40,326
France	82	102	1,280
Germany	105	49	119
Italy	415	970	10,819
Poland and Danzig	1	7	13,755
Soviet Russia in Europe	387	236	3,142
Spain	124	7	2,599
Sweden	388	189	183
United Kingdom	4,370	2,910	6,657
Other Europe	3,391	2,487	1,772
Far East	34,820	25,946	66,032
British Malaya	534	172	1,432
China	1,883	2,091	4,623
Netherlands East Indies	3,728	3,238	3,543
India and Ceylon	4,420	571	2,381
Hong Kong	124	1,375	953
Japan	14,920	11,269	40,578
Kwantung	165	318	228
Philippine Islands	7,562	5,338	7,812
Australia	737	1,002	2,502
New Zealand	187	213	18
Other Asia and Far East Markets	560	359	1,962
Africa	2,380	1,364	1,103
Union of South Africa	589	73	586
Egypt	32	953	64
Mozambique	1,432	76	332
Other Africa	327	262	121

since July of 1924 even falling off from the low mark set last month. The downward trend was by no means general, however, as there were only 17 instances of reduced receipts against 16 increases and one instance in which there was no trade either this or last month. The chief product imported during the month was pig iron, 8747 tons.

Steel Statistics Show August Low for First Eight Months of 1930

COMMERCIAL steel castings' new orders in August fell to a low for the year when only 51,464 tons were booked. The monthly decline has been successive since March, and August's total represents only a 36 per cent capacity rate, from reports made to the department of commerce:

1929	Total bookings tons	Per cent of capacity	Total production tons	Per cent of capacity
Aug.	101,777	70	121,238	83
(8 mos.)	929,067	80	910,833	78
Sept.	86,584	59	106,995	73
Oct.	136,208	94	120,937	83
Nov.	97,888	67	110,297	76
Dec.	90,287	62	106,569	73
(year)	1,340,034	77	1,335,631	78
1930				
Jan.	101,728	70	109,296	76
Feb.	104,727	80	107,897	75
March	122,658	85	113,737	79
April	93,200	65	110,903	77
May	91,307	63	105,242	73
June	61,358	43	90,985	63
July*	58,069	40	79,181	55
Aug.	51,464	36	64,403	45
(8 mos.)	694,511	60	781,644	68

*Revised.

"HOTTEST SPOT IN UNIVERSE"

In a nearly perfect vacuum electricity creates a spot of heat calculated to be 900,000 degrees, Fahr. This is approximately 90 times as hot as the sun. The temperature is calculated by measuring velocity of molecules of electrode metal which has been boiled away by the heat. This was developed at Westinghouse Research Laboratories, East Pittsburgh, Pa., by Ragnar Tanberg, investigating characteristics of electric arcs in a vacuum. Photo shows Dr. J. Slepian, of Westinghouse, demonstrating "the hottest spot in the universe"

Malleable Castings Down

Production of malleable castings in August was 25.9 per cent of capacity, against 30.8 per cent in July and 70.6 per cent in August 1929. August tops a successive monthly decline for the past six months, according to reports made to the department of commerce:

	Production, tons	Shipments, tons	Orders booked tons	Per cent cap. operated
1929				
Aug.	69,173	69,824	62,541	70.6
(8 mos.)	607,755	602,670	588,447	79.2
Sept.	59,087	62,571	52,647	61.2
Oct.	65,526	58,733	61,164	66.7
Nov.	46,459	46,487	40,145	47.7
Dec.	46,029	47,689	43,475	47.3
(year)	824,856	818,150	785,878	71.3
1930				
Jan.	61,381	57,820	58,009	61.6
Feb.	65,942	59,971	61,606	67.4
March	63,464	65,164	60,915	64.6
April*	62,011	60,904	54,606	63.1
May*	53,473	55,582	47,012	53.7
June*	39,334	43,933	33,850	40.0
July*	30,742	32,548	30,064	30.8
Aug.**	25,207	31,954	25,085	25.9
(8 mos.)	401,554	407,876	371,147	50.9

*Revised. **Preliminary.

Output of Coal Holds

For the week ended Sept. 20 production of bituminous coal is estimated at 8,915,000 net tons, subject to revision. Output of the prior week is now corrected and stands at 9,145,000 tons. To date in 1930 327,157,000 tons have been mined, comparing with 1929's aggregate of 371,818,000 tons in the corresponding period.

Steel Furniture at Low

Slump was shown in August's orders for steel furniture and shelving. Shipments about held the July

(*Concluded on Page* 30)

Industrial Men in the Day's News

Frank Parker, President, Iron & Steel Products Inc.

ORGANIZING his own business at the age of 40, he considers friendships and contacts of the past 25 years his chief asset.

WITH Republic Iron & Steel Co. for 12 years, he has been with Briggs & Turivas Inc. since 1916, latterly as vice president and general manager.

THE United States government tendered him the position of assistant director general in charge of steel and iron scrap during the World war.

FRIENDSHIPS and business contacts of more than a quarter century with iron, steel and railway supply industries, are considered valuable assets by. Frank Parker, who recently organized Iron & Steel Products Inc., in Chicago, as noted in STEEL of Sept. 11. He is president of the new company formed to conduct a general trading business in iron and steel products, railway car parts and equipment.

Mr. Parker, widely known in iron and steel scrap circles, has been interested for many years in helping to bring about more effective marketing standards for this important raw material, and ever has sought improved cooperation between buyers and sellers. In addition to being vice president of the Institute of Scrap Iron and Steel Inc., New York, he is head of the Chicago chapter of that body. He has become an authority on the use and classification of steel scrap materials.

Born in Chicago in 1890, Mr. Parker shaped his career early in life to the steel industry. Leaving Chicago schools at 15 he obtained his first position in the purchasing department of the Republic Iron & Steel Co., now Republic Steel Corp., when that interest's general offices were in Chicago. He remained at the Chicago branch purchasing department when general offices were transferred to Pittsburgh in 1907, later being placed in charge of the Chicago purchasing department. When the Chicago purchasing department was merged with the western division operating department, at the time the general offices were removed from Pittsburgh to Youngstown, O., Mr. Parker became assistant general superintendent of Republic's western division, handling both purchasing and operating details. He continued with the Republic company for 12 years, resigning in 1916 to become general manager of Briggs & Turivas Inc., Chicago and Blue Island, Ill., dealer in iron and steel scrap, cars, car parts, abandoned plants and railroad material. Made vice president and general manager two years ago, he continued in those capacities until his resignation Sept. 1, 1930. During the World war the United States government offered him the position of assistant director general in charge of scrap iron and steel, but the war ended before arrangements were concluded for the appointment.

Mr. Parker is well versed in engineering and metallurgical chemistry as a result of eight years special study at the Armour Institute of Technology, Chicago. He will continue as president of Railway Car & Equipment Corp., a subsidiary of Briggs & Turivas, formed three years ago to repair and rebuild freight cars and to operate a private tank car line. This company will handle the Briggs & Turivas company's second hand car and car parts business.

R. A. SCHOENFELD has been made sales engineer at Chicago for Hevi Duty Electric Co., Milwaukee, manufacturer of electric furnaces. For seven years past Mr. Schoenfeld has been sales manager for the Claud S. Gordon Co., Chicago, and prior to that was associated in engineering work with the Chicago Flexible Shaft Co., and the Barkling Fuel Engineering Co. He is a graduate of Mayo college, now a part of Northwestern university, and is a member of the Chicago chapter of the American Society for Steel Treating, as well as other organizations.

A. W. Anderson has been appointed sales manager for the Gordon company, Chicago, manufacturer of high temperature engineering equipment, pyrometers, furnaces, etc. to succeed Mr. Schoenfeld. Mr. Anderson formerly was with the Illinois Steel Co., but for the past 12 years has been in charge of service and for the last five years in charge of production for the company.

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James W. Owens, who was presented the Samuel Wylie Miller medal

at the banquet of the American Welding society at Chicago, Sept. 25, resigned recently as director of welding, Newport News Shipbuilding & Dry Dock Co., Newport News, Va., to become secretary and engineering director, the Welding Engineering & Research Corp., 25 West Forty-third street, New York.

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Frank B. DeLong, recently manager of the Seattle branch office of Grinnell Co., of the Pacific Coast, has been promoted to Pacific coast manager with headquarters at Seattle.

R. F. Wadick has been promoted to the office of manager of the fire protection division for all Pacific coast branches.

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Thomas Woods, assistant to the president, Carnegie Steel Co., Pittsburgh, Sept. 22 was made a director to fill the vacancy on the board caused by the recent resignation of John S. Oursler, former vice president.

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C. B. Gleason, assistant to Harry T. Gilbert, special assistant president, Republic Steel Corp., Youngstown, O., has transferred his headquarters to the Cleveland office of the company, Union Trust building.

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Edward K. Klingelhofer, former vice president and general manager, Pittsburgh Bridge & Iron Works, Pittsburgh, was elected president to succeed his father, the late George E. Klingelhofer.

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George H. Aupperl, for the past two years consulting metallurgist for Tobatta Foundry Co., Tokyo, Japan, has returned to the United States. Prior to his two years in the Orient Mr. Aupperl for a number of years was connected with the National Roll & Foundry Co., Avonmore, Pa.

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Peter Igoe, Igoe Bros., Newark, N. J., has been elected president of Taylor-Davis Inc., Philadelphia, succeeding Arthur P. Goldsmith, who resigned to organize the A. Taylor Steel & Wire Co. H. E. Calves, sales manager for Taylor-Davis Inc., also has been elected secretary.

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G. S. von Heydokampf has been appointed research engineer, Southwark Foundry & Machine Co., Philadelphia. He formerly was engineer of tests, Babcock & Wilcox Co., Bayonne, N. J., coming to this country about four months ago from Brunswick, Germany.

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Harry D. Cherry, secretary, Kewanee Boiler Corp., Kewanee, Ill., for the past eight years, has resigned. He has been employed by the company for 46 years, entering the Haxtun Steam Boiler Heater Co. as an office boy. The Haxtun company preceded the present company.

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L. B. Mead, Indianapolis manager since 1928 for Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been appointed assistant industrial manager for the northwestern district, with headquarters at Chicago. He has been succeeded at Indianapolis by William J. Morgan, affiliated with that office since 1921.

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E. O. McFadon of Ferro Enamel Corp., Cleveland, has returned to St. Louis, to take charge of sales.

Wilson Owen of Berea, O., a graduate of Dennison university, has become affiliated with the staff of the Ferro corporation in charge of jobbing sales.

J. Ralph Patterson

Who, as noted in STEEL of Sept. 25, was made manager of roll and alloy sales, Mackintosh-Hemphill Co., Pittsburgh, when those departments recently were combined.

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Herbert A. May, Pittsburgh, has been elected director of the Union Drawn Steel Co., Beaver Falls, Pa., a subsidiary of Republic Steel Corp., Youngstown, O., to fill the unexpired term of the late George Davidson.

Mr. May was also recently elected a director of the Pittsburgh & West Virginia railroad.

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W. R. Judson, for 13 years representative in Chile of Allis-Chalmers Mfg. Co., Milwaukee, has been appointed managing director of Allis-Chalmers of France, Paris, the company's controlling office for all Europe and northern Africa. He will leave Milwaukee Oct. 15 for Paris to assume his new duties. Mr. Judson succeeds H. I. Keen, who is retiring after serving the company in Europe 15 years and an association with of a quarter of a century. Mr. Judson is succeeded in the Chilean office by Erling Winsnes, who has represented the company in Bolivia for the last six years.

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L. T. Miller, director of purchases, Detroit Steel Products Co., Detroit, on Sept. 25 was elected president of the Detroit Association of Purchasing Agents. Harry L. Stewart, of the L. A. Young Steel & Wire Co., was made first vice president, and George Myers of the Dominion Screw Products Co., treasurer.

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Frederick M. Kreiner was elected a vice president of Manning, Maxwell & Moore Inc., New York, machine dealers and builders, at a meeting of the executive committee Sept. 23. Mr. Kreiner will continue his duties as treasurer, a position he has held since 1920. Mr. Kreiner has been connected with the Manning, Maxwell & Moore organization since 1903.

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Dr. Fritz W. Meyer, foundry consultant, metallurgist and vice president of Mississippi Valley Research Laboratories, St. Louis, sailed recently for Europe. He will visit his father, who is director and manager of Sulzer Diesel Engine Works, Wintherthur, Switzerland, and also will tour all European countries studying latest developments in ferrous and nonferrous foundries.

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Morris Stone, mechanical engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has received the second award of the Benjamin Garver Lamme scholarship, providing one year advanced study at any American or foreign college or university. This scholarship was established by the Westinghouse company in honor of Mr. Lamme, who was its chief engineer.

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C. Stuart Tobin, associated for 25 years with Froment & Co., 150 Bank street, New York, iron and steel jobbers, will soon engage in life insurance underwriting. He has been an active member for many years of the Cost of Doing Business committee of the American Steel and Heavy Hardware association and has been on the board of directors of the Steel Credit Association Inc., New York.

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Alfred J. Forschner, at one time owner and proprietor of the Alfred J. Forschner Co., Philadelphia, and who in 1926 became affiliated with the Philadelphia office of McMyler-Interstate Co., Cleveland and Bedford, O., has been made vice president and secretary of Atlas Conveyor Co. Inc., Philadelphia. Prior to organizing his own company, Mr. Forschner was identified with the Osgood Co., Marion, O.

Obituaries

W J. CORBETT, 57, superintendent of the bar mill of the Gulf States Steel Co., Gadsden, Ala., died recently. Mr. Corbett had been ill for some time. He was born near Birmingham, Eng., in 1873 and had been connected with the steel mill at Gadsden for 20 years.

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Edward A. Steele, 46 treasurer, William Steele & Son Co., Philadelphia, contracting engineer, died Sept. 26.

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Matthew Stoll, 41, founder and president Stoll Mfg. Co., LaCrosse, Wis., tools, dies, stampings, etc., died Sept. 12 after a lengthy illness.

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H. J. Yount, 66, president, Eagle Machine Co., Indianapolis, died recently in Battle Creek, Mich., after an illness of two weeks.

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Bradford T. Borden, 50, inventor, Lakewood, O., died at Cleveland, Sept. 26. Mr. Borden formerly was president of Borden Machine & Tool Co., Warren, O.

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William Delavan Baldwin, 74, chairman of the board, Otis Elevator Co., and for many years president of the organization, died Sept. 26 at Yorktown Heights, N. Y.

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John D. Ter Doest, 42, superintendent of the Mid-States Steel & Wire Co., Crawfordsville, Ind., died after six weeks' illness. He had been connected with the mill 20 years.

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Walter B. Eichleay, 52, secretary-treasurer, John Eichleay Jr. Co., Pittsburgh, died Sept. 26. He also was president and director of the Monongahela Iron & Steel Co., Pittsburgh.

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Henry B. Fiedler, 74, formerly general manager and superintendent, Spring Valley Iron & Ore Co., Spring Valley, Wis., died Sept. 21 at Milwaukee. He retired many years ago.

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Charles H. Fry, 41, president Charles H. Fry Construction Co., Erie, Pa., died Sept. 25. He was treasurer of the Associated General Contractors of Pennsylvania.

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Webster L. Marble, founder and president of the Marble Arms & Mfg. Co. and the Marble-Card Electric Co., Gladstone, Mich., died Sept. 22 at Round Lake, Mich.

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John H. McDonald, superintendent of transportation at the Steelton, Pa., plant of Bethlehem Steel Corp., died at his home in Harrisburg, Pa., Sept. 16.

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Walter S. Mitchell, 73, secretary and director of McClintic-Marshall Co., Pittsburgh, and vice president of the Mellon National bank, died at Sewickley Heights, Pa., Sept. 25.

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Eugene H. Moak, general manager, Moak Machine & Tool Co., Port Huron, Mich., died at his home in that city Sept. 10. He also was president of the Moak Realty Co.

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Don Arbuckle, production manager, Continental Steel Corp., Kokomo, Ind. died, Sept. 19, following an operation. He was associated for many years with the Kokomo Steel & Wire Co. prior to its absorption by the Continental Corp.

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William H. Dean Jr., 43, superintendent of the Highland Iron & Steel Co., Terre Haute, Ind., died in a hospital there recently. Settling in Terre Haute 23 years ago, he had been connected with the company his entire business life.

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Edward W. Hyde, 63, former president, Bath Iron Works, Bath, Me., died Sept. 26 at Providence, R. I. He also was founder and president of Hyde Windlass Co., Bath. Mr. Hyde had served that city as mayor for three terms.

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Frederick D. Platt, an engineer for 31 years for General Electric Co., Schenectady, N. Y., died Sept. 20 in Moscow, Russia, where he was sent last March to supervise electrical construction for the soviet government.

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A. R. Button, 80, for 25 years manager of the now abandoned Crescent works, Cleveland, American Sheet & Tin Plate Co., Pittsburgh, died at Cleveland last week. After retirement he became associated with Cleveland Hardware Co., Cleveland, remaining for 13 years. He again retired several years ago.

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Theodore I. Jones, 51, head of T. I. Jones Inc., New York, consulting engineer, died at Newark, N. J., Sept. 12. A native of Utica, N. Y., Mr. Jones was a graduate of the Massachusetts Institute of Technology.

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Oscar Enoch Leighton, president and general manager, Ajax Spring Stabilizer Co., Boston, died Sept. 17. Mr. Leighton was born in Madison, Me., in 1882, but latterly his home was at Cambridge, Mass. From 1912 to 1925 he was general manager for Lovejoy Mfg. Co., Chicago.

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I. N. Trouth, 50, former secretary of the Henry H. Sheip Mfg. Co., Philadelphia, died Sept. 18 as a result of an automobile accident near Martinsburg, W. Va.

Iron and Steel Institute To Hear Five Papers

Announcement is made by the American Iron and Steel institute of program details for the thirty-eighth general meeting of the institute, to be held at Hotel Commodore, New York, Friday, Oct. 24. Three sessions, a forenoon session at 10 a. m., an afternoon session at 2 p. m., and a banquet at 7 p. m., are planned, with a luncheon served during the noon recess.

Five technical papers are scheduled: "The Structures of the High Chromium Stainless Steels and Irons," by E. C. Bain, research department, United States Steel Corp., Kearny, N. J.; "Transportation Within the Steel Plant," by D. M. Petty, Bethlehem Steel Co., Bethlehem, Pa.; "A Recording Dust Concentration Meter for Blast Furnace Gas," by Dr. A. W. Simon, Tennessee Coal Iron & Railroad Co., Birmingham, Ala.; "Some Recent Developments in the Cold Rolling of Strip Steel," by Stephen Badlam, consulting engineer, Pittsburgh; and "Scope and Efficiency of Dry Cleaning of Coals," by Maj. K. C. Appleyard, managing director, Birtley Iron Co. Ltd., England, and Edward O'Toole, general superintendent, United States Coal & Coke Co., Gary, W. Va.

Steel Furniture Lower

(*Concluded from Page* 27)

rate. New orders in the business group were at a low over the past year. Department of commerce reports in the following show 1930 behind 1929:

	Business Group New orders	Business Group Shipments	Shelving New orders	Shelving Shipments
	(In Dollars, 000 omitted)			
1929				
Aug.	2,417	2,482	931	889
(8 mos.)	23,416	23,388	8,210	7,784
Sept.	2,294	2,313	879	842
Oct.	2,842	2,983	927	979
Nov.	2,900	2,631	801	859
Dec.	2,583	2,781	735	856
(year)	34,036	34,038	11,554	11,322
1930				
Jan.	2,886	2,890	724	674
Feb.	2,370	2,549	758	682
March	2,627	2,726	839	812
April	2,523	2,427	796	814
May	2,310	2,342	725	751
June*	2,006	2,168	699	705
July*	1,842	1,813	601	610
Aug.**	1,766	1,967	529	559
(8 mos.)	18,332	18,884	5,673	5,609

*Revised. **Preliminary.

Here and There in Industry

PHELPS-DODGE CORP., New York, copper producer, has acquired control of the National Electric Products Corp., New York, by exchange of stocks. Through a subsidiary the latter owns the majority of the stock of the Habirshaw Cable & Wire Corp. with plants at Pittsburgh and Economy, Pa.; Bayway, N. J.; Bridgeport, Conn.; Yonkers and Nepperhan, N. Y.; Fort Wayne, Ind. and Los Angeles. The National Electric company is a large manufacturer of metal products for the electrical and building industries.

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Perfection Stove Co., Cleveland, recently placed a contract with the Ferro Enamel Corp., Cleveland, for a gas-fired U-type continuous porcelain enameling furnace.

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York Commercial Body Corp. has leased a building at Kokomo, Ind., for five years and will establish an assembly plant for production of truck bodies.

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Pittsburgh Steel Products Co., Pittsburgh, has moved its branch office at Tulsa, Okla., from the Atlas Life building to 1405 Philtower building. S. E. Elder is manager.

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Guide Lamp Co., Anderson, Ind., manufacturer of automobile lamps, is completing removal of machinery from its Cleveland plant to Anderson and will have capacity for 20,000 lamps daily.

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W. J. Holliday & Co., Indianapolis, steel structural shapes, has purchased a site in Hammond, Ind., from the Illinois Car Co., upon which the former may build a fabricating shop for the Chicago district. The purchase price was $100,000.

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Luce Mfg. Co., Lansing, Mich., has been formed to take over part of the activities of the Hugh Lyons Co., metal stamping and commercial body manufacturer. Homer D. Luce, first vice president of the Lyons company, is president of the new concern. George H. Hopkins is vice president and Carroll L. Hopkins is secretary and treasurer. The new company will take over the body plant and offices of the older company.

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A. Kasle Co., Detroit, has been incorporated to conduct a brokerage business in iron and steel scrap. The company will take over the brokerage business which has been conducted by Abe Kasle for the past six years. Abe Kasle is president and treasurer of the new company and Burt D. Howe is vice president. Mr. Howe has acquired a considerable interest in the business. Offices are located in the General Motors building.

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Ulster County Foundry Corp., mentioned in STEEL last week as located at Poughkeepsie, N. Y., is at 20-40 St. James street, Kingston, N. Y. It has finished its first century of operation.

Briton Advocates Credits to Steel Producers

Washington—Advancement of government credits to British iron and steel producers is the basis of a scheme to restore prosperity to the industry suggested by Sir Joseph Calvelt, chairman of the of the Middlesbrough and district employment committee to the British ministry of labor, according to dispatches to the department of commerce.

According to its proponent the scheme would enable iron and steel producers to commence immediately the production of pig iron for stock against the more prosperous period which he feels will shortly be forthcoming.

Extension of credit by the British government, he holds, will reduce unemployment and effect a considerable saving in payments under the dole.

Republic Forms Six Sales Divisions

General sales headquarters of the Republic Steel Corp., Youngstown, O., under Norris J. Clarke, recently named vice president in charge of sales, will consist of six main divisions, as follows:

J. M. Schlendorf, alloy division; W. F. Vosmer, bar division; J. E. Holmes, pipe division; C. E. Hilkert, pig iron and by-products division; A. R. Johnson, sheet and tin plate division; F. H. Loomis, strip division.

Sales headquarters will be at Youngstown for all divisions except alloy, which will be at Massillon. A central order and service department is being established at Youngstown under R. J. Morgan.

F. C. Young, general manager of sales of the Union Drawn Steel Co., Beaver Falls, Pa., a subsidiary, will be at Beaver Falls. J. S. Langston, manager of sales of the die rolling division, who has been in Youngstown, will be stationed at Buffalo, where the die rolling equipment is located.

Says Manganese Profit of Twice the Market Possible

New York—The Soviet government can make a paper profit of $45.62 a ton on manganese selling in this country for $12.50, states Henry D. Baker, former commercial attache in Russia, through the American Manganese Producers' association. The association now has an action pending at Washington for an antidumping order against Russian manganese. Mr. Baker explains:

"The manganese selling at $12.50 a ton on the official rate of about 2 rubles to the dollar, represents 25 rubles. These 25 rubles are evidenced by bills of exchange for United States currency. This means that 3 rubles may be issued by the State Bank of issue for every ruble represented in the shipments."

Thus three times 25 rubles make 75 rubles, And then as the Commisariat for Finance can put out treasury notes up to three-fourths of the bank notes, then three-fourths of 75 rubles or 56.25 rubles thus added to 75 rubles makes 131.25 rubles.

"And then converting these rubles back to dollars in the same ratio, two to one, gives $65.62. And then deducting $20 of assumed production cost, there would be a wonderful profit of $45.62 per ton."

Government officials continue in conference with the Chicago board of trade in an effort to prevent further short selling of wheat by Russia. On the continent, the leading nations complain that Russia is dumping grain, mineral products, lumber, hard candy and other products in an effort to lower prices and foment discontent.

Farrell To Address Structural Steel Body

American Institute of Steel Construction Inc., New York, has formulated a preliminary outline of the program for its annual convention at the Carolina hotel, Pinehurst, N. C., Oct. 28-Nov. 1. The banquet will be addressed by James A. Farrell, president, and E. P. Thomas, vice president, United States Steel Corp., and E. W. Beatty, president, Canadian Pacific railway.

MIRRORS of MOTORDOM

DETROIT

MODERATE-SIZE releases from Chevrolet, Reo and Cadillac-LaSalle for material for their new models attempt to impart a bit of brightness to the automotive situation, but the effect is feeble in the darkness shrouding the operations of other manufacturers, particularly Ford.

About a year ago it was said here that the automotive industry did not fear that the country was going back to buggies. That still holds good, but as the industry turns into the fourth quarter it is taking a frank look ahead, and in the immediate future can see nothing encouraging.

Normally, retail automobile sales are low in the last quarter. Except a man be confronted with a mandatory replacement or should feel expansive at Christmas time, there usually is no reason why he should buy at this season. This year there is even less reason.

Viewing the industry and the quarter broadly, only one manufacturer can be expected to improve his operations this quarter. Several, now on new models, will maintain their rates a short time. The remainder, as a group, are slipping, and slipping fast.

September output of passenger cars and trucks, it is estimated, fell short of 200,000, compared with 223,046 in August and 415,120 last September. To equal the last quarter, of 1929, a monthly average of 240,000 cars is necessary—a manifestly impossible average. Barring 1927, the current quarter is likely to be the poorest since the recovery from 1921.

Ford Reduces Both Work Week and Daily Rate

Ford production is declining so rapidly that Detroit is genuinely alarmed. Last week the operating schedule at Fordson was curtailed from four days a week to three, and judging from holdups broadcast to parts suppliers, the work week at Fordson for an indeterminate period begins Monday and ends Wednesday.

Even for this shorter week daily output, which has been averaging a little above 5000 cars and trucks, has been reduced. The daily rate now appears nearer 4000 units than 5000. More plant and office employes at Fordson have been dismissed, and some of the remaining office employes have had their hours and salaries reduced to conform with the plant's operations.

For September, Ford was scheduled to make 80,000 units—an average of 5000 a day four days a week. Actual production probably fell short of this. For October the tentative schedule was 60,000, but the double reduction in working days and daily rate endangers this.

Vacation and Price Cut Rumored; Eight Not Likely

Rumors persist that Ford will shortly duplicate his three-week vacation of late July and early August. There is nothing definite on this, but if Ford were to shut down about three weeks over the year-end, or even the entire month of December, it would occasion little surprise.

Ford sales, like those of other automotive manufacturers, have slowed up considerably in the past month, and the three-day week at Fordson is an effort to conform production with sales. In previous similar circumstances a reduction in price has been attempted as a stimulus.

The slower retail situation has also revived rumors that a radical change will be made in the Ford next year. There is no doubt that Ford engineers have perfected a low-price 8-cylinder motor, but everything in Mr. Ford's past indicates his conviction that his field is the low-price, low-cost service one. Mechanical improvements in the present four, however, are steadily being adopted.

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At its branches Chevrolet continues to assemble the last of its 1930 series and to work down its inventories, but on some parts for the 1931 model production is already getting under way.

Chevrolet expects to announce the new model between Nov. 1 and 15, and production must be attained shortly. For the Chevrolet foundry at Saginaw much pig iron and scrap are being brought in by boat from Lake Erie ports, while Chicago mills will ship considerable spring and forging steel to Detroit by water before navigation closes. Chevrolet releases will be the bright spot of October for the steel industry.

The new Chevrolet, unquestionably, will continue to be a six. The wheelbase will be 2 inches longer, and the motor slightly larger. Wire wheels will continue standard on all models. Much more corrosion-resistant steel will be used.

Chevrolet has outgrown its place in the General Motors' "family party" and will soon be on the air with Chevrolet Chronicles from a list of radio stations rivaling Chrysler's.

New Reo, Streamlined, Is Advanced in Design

Considering the new Nash models as undisclosed, the Royale Eight which Reo will unveil Oct. 11 is said to be the smartest automobile job brought out this year. From every angle its European parentage is apparent, and from radiator to trunk there is not a corner.

The new V-type radiator and front

fenders, viewed headon at a distance, are reminiscent of a motorboat throwing spray. The body, at its junction with the rear fenders, flows out instead of in, continuing the long rakish line starting with the hood, curving over the top and then out at the rear.

The running and splash boards are of a lattice design, the latter being covered with a transparent material which facilitates cleaning. The trunk is set into the rear so that only the top, rear and parts of the sides are visible. On top of the cushions are 4 inches of down.

The new eight will be slightly higher priced than previous Reo sixes. For the time being at least the Reo line will also include sixes. Material releases for the new eight are brisk. Murray Body specifications also reflect improved Reo business.

Hudson to Make Concerted Drive on «Lost Market»

Hudson is setting out to recapture the market it lost when it went to a light-weight, small 8-cylinder car in 1930. There were manufacturing and servicing economies in making the Hudson motor virtually the Essex six plus two cylinders, but also the handicap of being branded as a glorified Essex.

The so-called Hudson market is that for a large car, with a heavy, powerful motor, selling just above $1000. Just as Buick three years ago alienated the best repeat business in the industry by adopting its bulging body, so Hudson last winter lost the second best.

The new Hudson will be larger and heavier, but still an eight. Murray will make the sedan bodies and Briggs the open ones. The factory is operating four days a week in some departments, but because Hudson assembles from banks of parts, a daily rate is meaningless. In Essex also, production is limited to cleaning up parts.

It is unverified as yet, but some recent developments at Hudson-Essex might be taken to indicate that a third car, smaller than the Essex, may be added to the line.

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The new Chrysler eights have failed to stimulate expected enthusiasm among buyers, and for October the schedule is 5000, about the same as for September. Dodge goes down to about a total of 1500 for October. DeSoto operations have been as low as 125 a day, two days a week. Plymouth is doing best of all, at 350 a day five days a week.

Even with a further cut to about 575 to 600 a day, five days a week, Buick is operating better than a year ago. Many Buick employes have been dismissed recently, and some have had their badges lifted, indicating they will be off at least 90 days.

Fisher Body has closed the two Detroit plants making Buick bodies and is concentrating Buick production at its Flint branch. It is believed that much of the large carryover of Buick body parts from the 1930 model, which was one reason why there were practically no body changes for 1931, has been worked off.

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Oakland-Pontiac will be out of production practically all of October to enable dealers to clean up their present stocks. The chances of Oakland continuing in the General Motors line appear better today than 60 days ago, and if there is a 1931 Oakland the syncro-mesh gear shift will be a feature.

As mothers of a former day cut down father's discarded pants for Little Willie, so General Motors is handing down its developments from the higher to the lower-priced cars of its line. The syncro-mesh gear shift was brought out by Cadillac, then released to LaSalle, next to Buick and now probably to Oakland and possibly Oldsmobile.

The Buick brakes also are a bequest from Cadillac and LaSalle. Most Fisher body innovations in the higher-priced bodies are now also to be found in the cheaper units.

Of the other General Motors lines, Cadillac-LaSalle continues at 150 a day five days, and will soon be ready on the Cadillac V-12. Fisher Body is concentrating its orders for the Cadillac-LaSalle line at the plant set aside for Fleetwood.

Oldsmobile is assembling 250 a day, three days, restricting purchases in view of model changes.

Multi-Cylinder Cadillacs Set Fine-car Pace

Willys at Toledo is assembling about 400 a day, five days, with no immediate prospect of an advance. Graham is at 90 a day five days, Hupp at 60 a day five days, Lincoln at 20 a day five days, Packard at 110 a day, five days.

Of the outside manufacturers Studebaker is reported to be assembling 300 a day four days a week, and Nash on new models is at 375 a day 5½ days. A low-priced eight will feature the 1931 Nash line.

The Cadillac V-16 and V-12 have set a pace which competitors will shortly recognize. Lincolns and Packards with more than eight cylinders are reported in the offing. Packard is now making its own custom bodies.

When the roll call of 1931 models is completed it will be seen that the use of corrosion-resistant steel has greatly increased, but no one manufacturer will be using as much as Ford. The investments of other makers in chromium-plating plants is one deterrent, but each passing year makes the write-off easier.

General Motors, it is said, will watch the Ford radiator through another winter. Meanwhile, on practically all of its cars the new steels are slowly making their way. The 1931 Chevrolet will make fairly-generous use, including the strap around the cowl.

The changeover from sheets to strip for the Ford radiator is slow, Ford continues to make the majority of his radiators and hence is specifying sheets; Motor Products is using strip for the remainder. A slightly narrower Ford radiator in the interest of economy is possible. Ford is putting 0.012-inch corrosion-resistant steel over No. 20 gage cold-rolled steel to make his hub caps stronger.

Ford has relighted most of the open-hearth steel furnaces at Fordson, despite a fair inventory of semi-finished steel and bars.

Detroit Steel Mills Dig In for Better Times

On Sept. 24 the Great Lakes plant of the National Steel Corp., at Ecorse, Mich., for the first time received hot metal from the adjacent Hanna furnaces. Two open-hearth furnaces at the Great Lakes plant are on, the mill rolling sheet bars and strip. Foundations already are in for the 10-inch bar mill, which will supplement the 14-inch mill.

The Michigan Steel Corp. has about completed its reconstruction which increases its capacity to about 30,000 tons monthly with little increase in equipment and floor space. Electrical and enameling stock, as well as autobody sheets, will now be within the corporation's range, diversifying its production.

The financing of Michigan Steel's improvements demonstrated again the marked confidence of stockholders in this project. Common shares were offered at $43 in the ratio of one to ten, and of the 22,220 shares thus offered, 98 per cent was taken up. These new shares participate in the Oct. 1 dividend of 1 per cent extra in stock and the usual 62½ cents in cash.

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To say that Detroit is genuinely alarmed over the further retreat in Ford production is putting it mildly. The purchasing power represented by employes of Ford and his parts makers is over half that available in the greater Detroit area. Slack operations at Fordson deal a severe blow to the city's business. Labor in

(*Concluded on Page* 64)

EDITORIAL

Business Slump Fails To Dampen Convention Ardor

VIEWED in retrospect, the Twelfth National Metal congress and exposition was everything that could be desired and perhaps more than was expected. The program was excellent, the exhibition comprehensive and representative, and the arrangements for the many activities of the week were satisfactory in every respect.

However, these features were anticipated by the majority of those who visited Chicago last week. The thousands of faithful followers of the four principal organizations which participated in the events of the week have learned through attendance at previous conventions to expect programs and exhibits of high merit. But what they did not foresee was the gratifying attendance, whole-hearted co-operation of exhibitors and unprecedented interest which attended the 1930 affair in spite of the depression from which business is just emerging.

Practically every branch of industry which is identified with the activities of the American Society for Steel Treating, American Society of Mechanical Engineers, American Welding society and American Institute of Mining and Metallurgical Engineers has been seriously affected by the prolonged period of business inactivity. The earnings of many companies have been reduced to the point where strict economies had become necessary. Therefore it was reasonable to fear that attendance at the Chicago convention might be disappointing, that exhibitors might find it difficult to participate as extensively as heretofore and that the pall of depression might mar the week's proceedings.

No Trace of Depression Apparent in Meetings or Show

That such fears were groundless was apparent as soon as the convention opened. In fact at no time during the progress of the elaborate program was there any indication of the effect of the business slump. If necessity for economy has caused any companies to curtail their activities in scientific research or in other laboratory work, no hint of such reduction in effort appeared in the technical discussions. On the contrary, the sessions were marked by unusual interest in new materials and methods.

If exhibitors were less willing or less able to display their products than in previous years when business was flourishing, that fact was not discernible at the show. Except for the restriction of many exhibits to "still" displays, instead of operating equipment—caused by lack of space—the 1930 show was as complete and as representative of the best material and equipment as any of its predecessors. And in several respects it was the most satisfactory exposition yet presented by its sponsors.

For instance, we do not recall any exposition in America in which the many uses of steel and nonferrous metals and their alloys were better exemplified than they were in the booths at Chicago. Metals of unparalleled variety in analysis, physical properties, form and method of production were displayed. The exhibits were a revelation in the degree to which they indicated the contributions of alloying and heat treatment to modern civilization. Chromium, nickel, vanadium, tungsten, cobalt, manganese, molybdenum and other elements have freed the designer from the restrictions of carbon steel. And similarly, modern heat treatment has enabled the metallurgist to bring out the best qualities of each alloy of steel.

Alloy Steels and Heat Treatment Dominate Convention

The significance of alloy steel and heat treatment permeated the entire congress and exposition. It was the outstanding topic of discussion in many of the technical sessions. It was the point of greatest interest in the show. The emphasis placed upon these two hand maidens of steel indicates that the steel industry is confident of the future possibilities of alloy steels and of the ability of modern heat treatment practice to adapt them to a broader field of use.

The National Metal congress and exposition was an effective vehicle for carrying new alloys of steel into the limelight. It also was an invaluable agency in focusing the attention of the metal industries upon the numerous developments in other materials and in methods for treating and fabricating them.

In thus revealing progress and in stimulating the best American talent to new accomplishments in the fields of metallurgy and engineering, the four technical societies last week performed a valuable service to industry. The officers, managers, committees and others responsible for the success of the great undertaking are to be congratulated for having staged such an eminently satisfactory event in the face of unusual difficulties.

Long-Time Trend Line of Steel Points Upward Despite Interruption of 1930

BY E. L. SHANER
Editor of STEEL

A SMALL boy who eats too many green apples undergoes a series of interesting experiences. First he is blissfully happy, confident that all is well with the world. Then when the first signs of sickness appear confidence changes to doubt. As the pain increases, doubt turns to fear, and finally—when he discovers that he is not going to die—fear gives way to hope.

American business has just passed through a similar experience. In a period of 15 months business sentiment has swung successively from confidence to doubt, doubt to fear and fear to hope. When at some time in the future the present hope changes to confidence we again shall be well on the way to prosperity.

How soon this will happen is a matter of opinion. In the steel industry we believe that the low point in activity was passed in July. Conditions were slightly better in August and additional gains have been made thus far in September.

The outlook in steel depends largely upon three factors—price, efficiency and demand. Prices are down almost to pre-war levels. Recent strength in the quotations for steel scrap—always a sensitive commodity—and the improved tone in the finished steel market indicate that prices may stiffen soon. But in general, steel producers are resigned to the belief prices over the next few years will be lower than the average range of the last decade.

This means that the steel industry must rely on increased efficiency to offset the disadvantage of low prices. This is all the more difficult because steel, unlike some other industries, is determined that wages shall not be cut. With low prices and high wages, profits must come from economies in production.

The steel industry is preparing to meet this challenge. Its furnaces, mills and finishing equipment are far more efficient than ever before. New processes are being developed, patent rights are being exchanged or pooled and obsolete plants are being abandoned in a sweeping effort to put steel's house in order for the next wave of tonnage.

This brings us to the subject of demand, which is all-important. Steel's four best customers are the railroads, the automobile industry, building construction and oil, gas and water projects. Demand from the first two has been disappointing, but the purchase of steel for buildings and bridges and for oil and gas lines has been gratifying. Any marked change in railroad and automobile demand must be upward rather than downward. Demand from industry in general probably will expand gradually. The net result is that orders for steel should increase slowly in the next few months.

Many of us are prone to attach too much weight to short-time variations in the volume of demand. It is well to remember that the consumption of steel in 1929 was 1000 pounds for every man, woman and child in the United States.

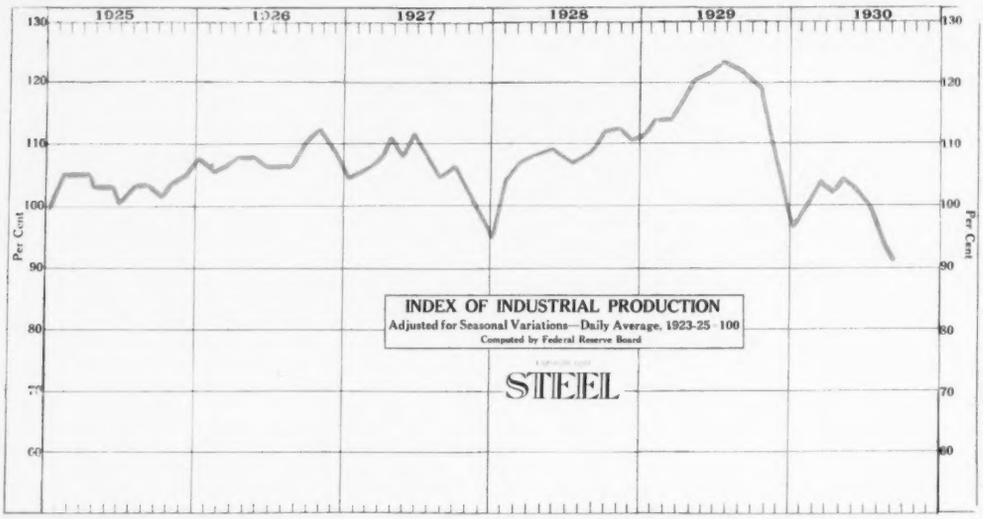
The average annual gain in per capita consumption of steel during the past 25 years has been 23 pounds. It also is significant that during this period, for every year in which a decline in steel production has occurred, there have been two years in which increases have been registered. The average annual gain in steel production over the last quarter century has been 2,100,000 tons. At this rate output in 1940 will be in excess of 75,000,000 tons—a figure which is in agreement with total consumption for that year computed on the basis of expected growth of population and indicated increase in annual consumption per person.

Thus it is evident that while the immediate trend of steel may consist of alternate gains and losses, the long-time curve points upward. Even in this poor year of 1930, total ingot production will amount to between 42 and 45 million tons, a figure that has been exceeded by an appreciable margin only three times in history—in 1926, 1928 and 1929.

In reality the American steel industry is only 66 years old, but already it has turned out its billionth ton of steel. It is investigating new markets and promoting new uses for its product more energetically than ever. And while the upward use of steel has been rudely interrupted by the events of 1930, the leaders of the industry were never more confident of the ultimate future of steel than they are today.

From a radio talk delivered Monday evening, Sept. 22, from the Washington studio of the Columbia Broadcasting system and transmitted through 37 stations in the United States and Canada. The address was one of a series of six on the business outlook in key industries presented in connection with a meeting in Washington of the National Conference of Business Paper Editors.

THE BUSINESS TREND



1930	
August	92
July	94
June	100
May	104
Apr.	106
Mar.	104

1929	
August	125
July	124
June	127
May	124
Apr.	122
Mar.	118
Feb.	117

Business Holds Its Hard Earned Gains

STATISTICS of current business continue to indicate a slow but perceptible improvement. The upward swing of car loadings, which was interrupted by the Labor day week-end, again has been resumed. Operations in the steel industry are holding their own or gaining slightly. A number of large consumers of raw materials have entered the market, which is encouraging.

Unfortunately, however, quite a number of reports on production and bookings for August have appeared during the past week, and a few commentators in the daily papers who have not taken the trouble to differentiate between the gloomy statistics of last month and the favorable weekly figures for September are issuing comment which is unnecessarily pessimistic.

Statistics Show That August Was Unusually Quiet Month

Within the past few days the monthly records of a number of barometers for the month of August have become available for the first time. The complete statistics on automobile production show that 232,838 units were turned out in the United States and Canada instead of the 240,100 estimated earlier in the month by the automobile chamber of commerce. Bookings of steel castings in August were lower than in July, but the new orders for railroad specialties were slightly in excess of the July total—representing the second consecutive modest gain. Bookings of structural steel also were down in August. Gross orders for foundry equipment also fell, which was somewhat unexpected in view of an unexplained jump in bookings several months ago. As expected, coke output in August also dropped to a low figure and stocks rose to a tonnage equivalent to 26 days' production.

Taken as a whole, this array of reports simply corroborates what was already generally known, namely that activity in August was almost as low if not lower than in July. The index of industrial production compiled by the federal reserve board stood at 92 for August, a drop from 94 for July. The board's index for iron and steel stood at 93 in August—the same as in July (in spite of a slight gain in ingot production).

Improvement in September Continues In Spite of Difficulties

Activity of the steel industry in September is holding well. Operations, which had been approaching the point of 60 per cent of steelmaking capacity since mid-August, last week slightly exceeded that level. The United States Steel Corp. has maintained a steady rate of 68 per cent for several weeks. The independent companies, which have found difficulty in maintaining an even course in operations, last week increased their rate from 52 to 54 per cent, thus carrying the average for the entire industry to a point slightly above 60 per cent.

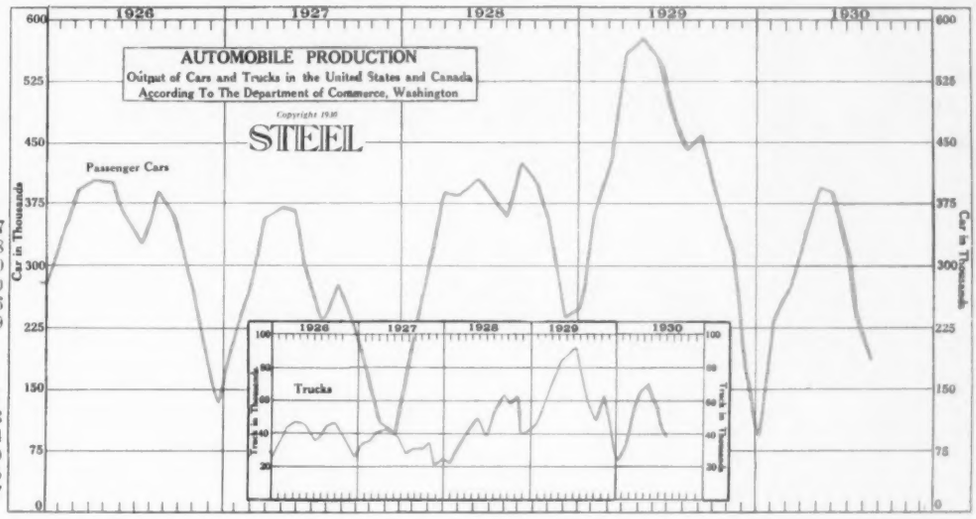
Prices still are uncertain. STEEL's composite dropped 8 cents last week to $32.56. The decline came in the face of a more satsfactorily stabilized market, and was caused by belated price reductions at Pittsburgh. In the meantime, several of the commodity price indices have continued their slow upward trend, while others have not yet turned definitely. Many observers believe the price situation is unusually significant at this time. The tardy recovery from the decline and the failure of prices to show positive signs of firmness are responsible for the general unwillingness of industry to enter the market for raw materials.

Passenger Cars

	1930	1929
August ..	194,234	452,857
July	231,256	439,598
June	301,898	469,260
May	384,287	541,310
Apr.	396,350	571,956
Mar.	354,274	546,489

Trucks

	1930	1929
August	38,604	59,985
July	41,295	78,703
June	48,669	98,164
May	57,791	94,940
Apr.	70,945	91,855
Mar.	67,769	79,587

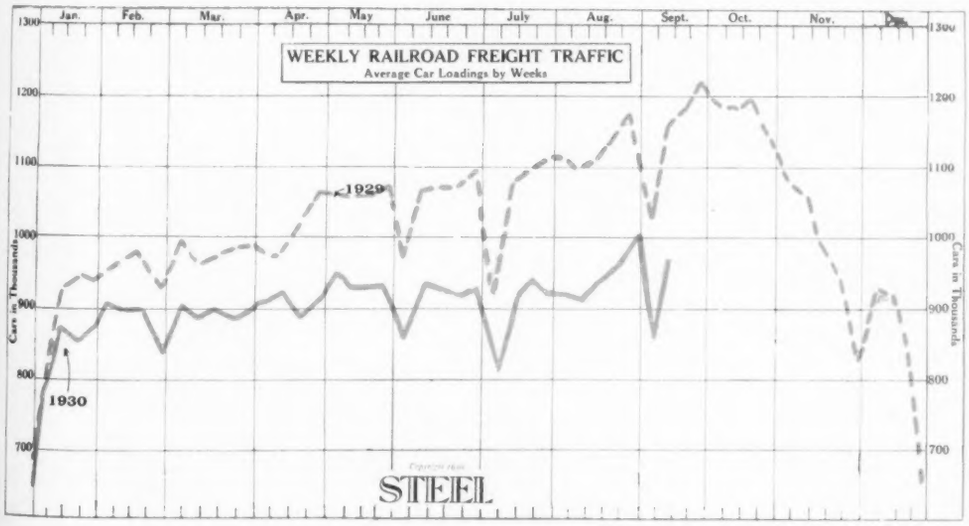


Automobile Output in August Falls Below Preliminary Estimate

As expected, automobile production in the United States and Canada in August dropped rather sharply from the July figure. The August output was 232,838 units compared with 272,551 units in July. This brings the total production for the first eight months of 1930 to 2,835,622 units compared with 4,444,947 units for the corresponding period of 1929. The eight-month total for this year is about 37 per cent under that for the first eight months of last year. Stocks of cars in dealers' hands at the end of August registered a further decrease, but the decline was due largely to a reduction in stocks of used cars. August output consisted of 194,234 passenger cars and 38,604 trucks.

Loadings of Revenue Freight Mount Nearer To Million Mark

One of the favorable aspects of the present business situation is the steady increase in freight car loadings. Gains have been made each week early in August, with the exception of course of the week in which Labor day fell. Loadings for the period ending Sept. 13 totaled 965,713 cars. This falls short of the total of 984,504 established in the week ending Aug. 30 but it represents a gain of 13 per cent over the Sept. 6 figure. Since the gain last year in the week following Labor day was 13 per cent, the recovery this year many be considered as fair. In 1929 the high point of the year came in the first week in October, after which loadings declined rather rapidly until the end of the year.

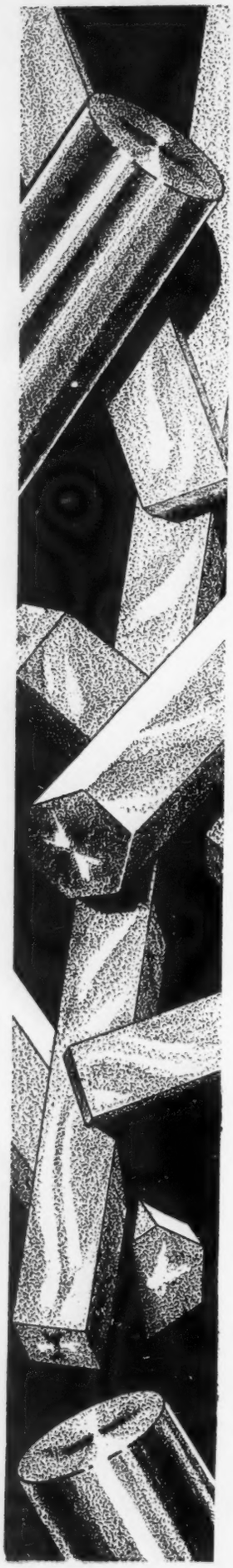


1930

Sept. 13	965,713
Sept. 6	856,637
August 30	984,504
August 23	940,549
August 16	922,823
August 9	904,157

1929

Sept. 13	1,153,062
Sept. 6	1,018,481
August 30	1,162,100
August 23	1,137,966
August 16	1,102,567
August 9	1,092,153



This is Number Seven of a Series of Advertisements

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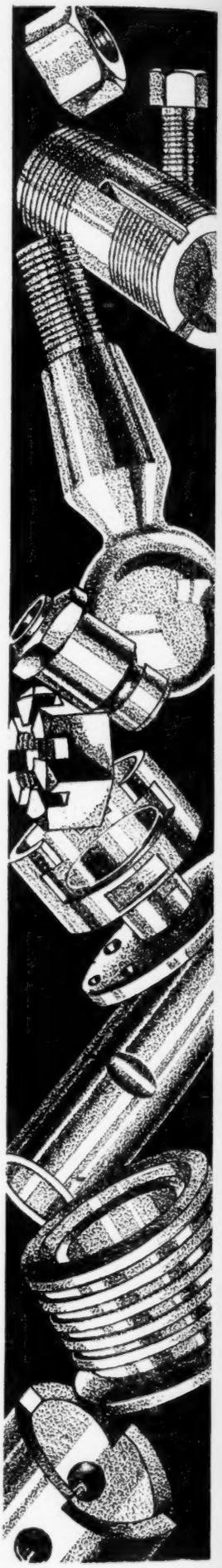
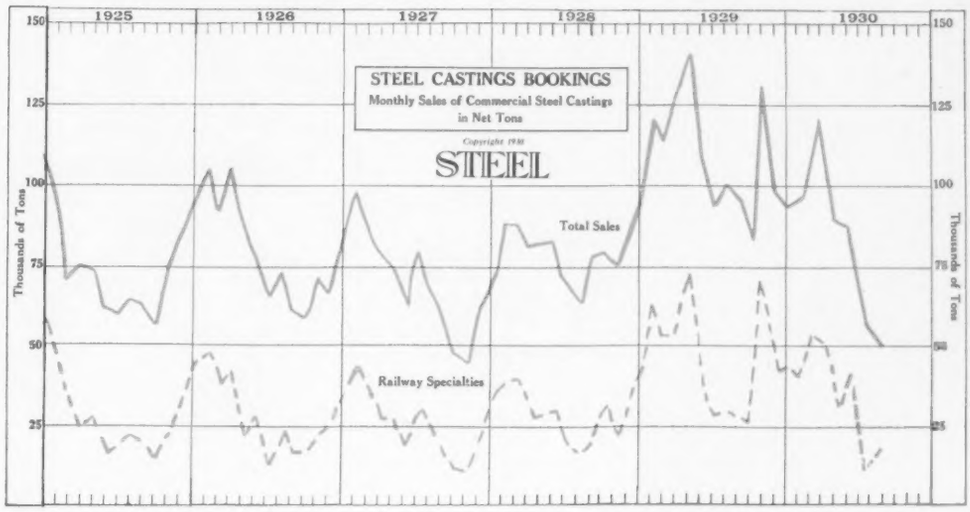
"The Rapid Duplication of Machined Steel Parts at Lowest Cost Continues to Depend Upon That Perfection and Precision Which Only the Cold Finishing Processes Can Give"

THE COLD FINISHED STEEL BAR INDUSTRY





Total New Bookings

	Tons
August, 1930	51,464
July, 1930	58,069
August, 1929	101,777

Railway Specialties

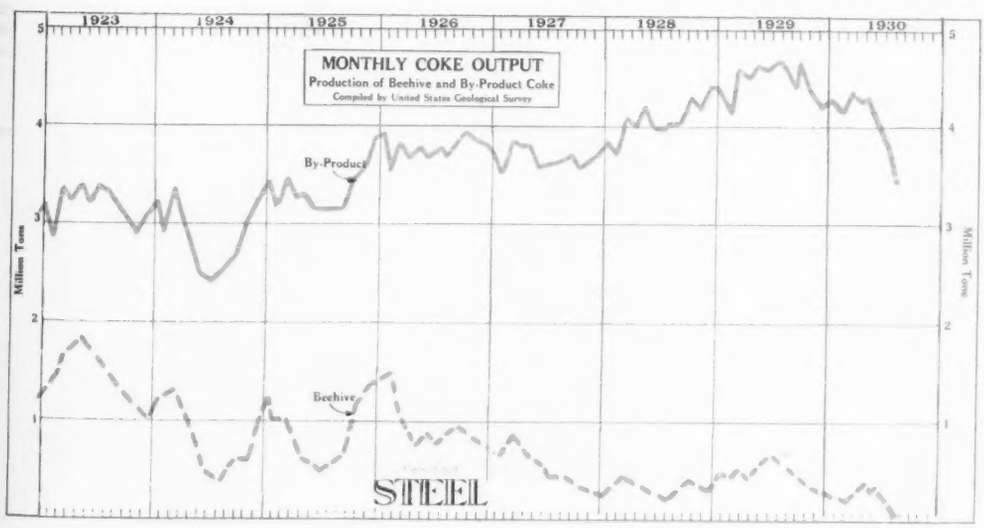
August, 1930	15,285
July, 1930	14,710
August, 1929	38,986

Bookings of Steel Castings Drop; Railway Orders Gain

New bookings for steel castings in August amounted to 51,464 tons or 36 per cent of plant capacity, according to the monthly statistics issued by the United States department of commerce. New orders for steel castings in July totaled 58,069 tons or 40 per cent of capacity. Bookings of railway specialties gained slightly in August, totaling 15,285 tons against 14,710 tons in July. This is the second slight increase in railway specialty orders in consecutive months. Production of all steel castings in August amounted to 64,403 tons compared with 79,181 tons in July and 121,238 tons in August 1929.

Production of Coke Is Down As Stocks Mount Higher

According to the monthly figures on the production of beehive and by-product coke issued by the United States geological survey, the output of both grades of fuel dropped in August. The production of by-product coke in that month amounted to 3,637,339 tons as compared with 3,770,426 tons in July and 4,642,785 tons in August last year. The August 1930 output of beehive coke was 169,500 tons compared with 214,600 tons in July. Stocks of by-product coke at producers' plants at the end of August rose to 3,091,997 tons against 2,741,009 tons at the end of July. Stocks on hand on August 31 were equivalent to about 26 days' production.



By-Product

	Tons
August, 1930	3,637,339
July, 1930	3,770,426
August, 1929	4,642,785

Beehive

August, 1930	169,500
July, 1930	214,600
August, 1929	561,800

WIN 1930 AWARDS

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• • •

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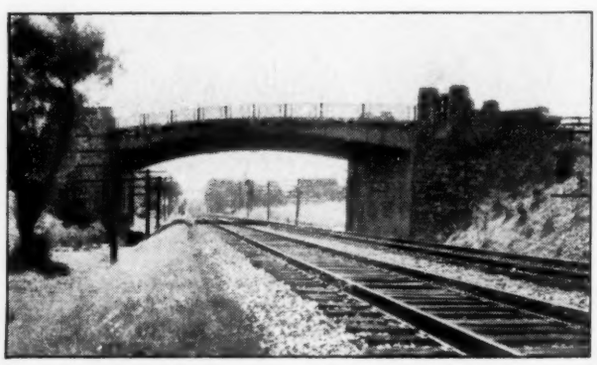
AMEMYA

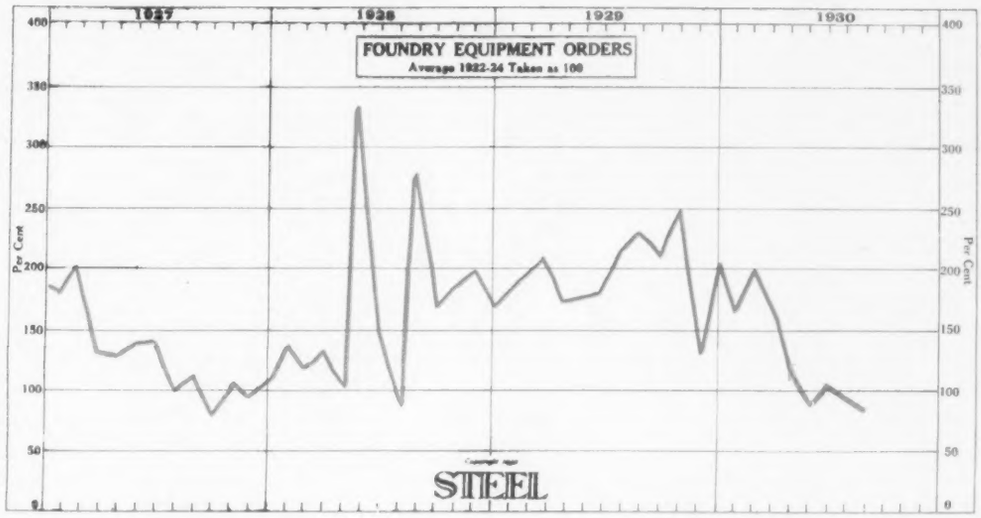
● *Wins long-span award. The Mount Hope Bridge, erected by McClintic-Marshall across Mount Hope Bay between Bristol and Portsmouth, R. I. Designed by Robinson & Steinman, Engineers, New York City, for the Mount Hope Bridge Company.*



● *Wins short-span award. The Mount Pleasant Bridge, constructed by Bethlehem Steel over New York Central Railroad at Mount Pleasant for Westchester County Park Commission. Designed by the Commission's Chief Engineer, Jay Downer.*

AMERICAN INSTITUTE OF STEEL CONSTRUCTION

STEEL INSURES STRENGTH AND SECURITY



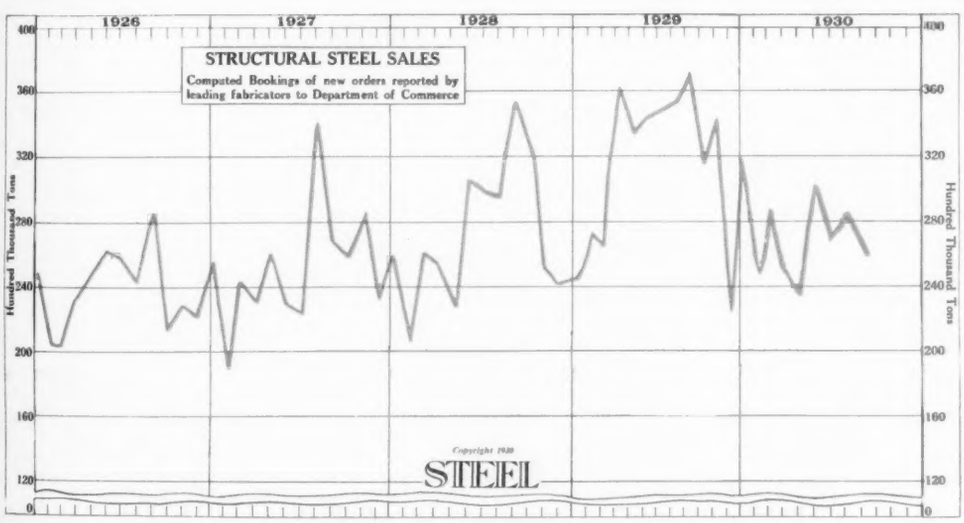
Per Cent	1930	1929
August	85.2	229.5
July	90.6	219.3
June	102.1	177.3
May	92.7	177.7
April	122.8	172.6
March	164.1	209.4

New Orders for Foundry Equipment Lower in August

Gross orders for foundry equipment in August were the lowest since September 1927, according to the monthly report issued by the Foundry Equipment Manufacturers' association. The index for gross orders for August stood at 85.2 compared with 90.6 in July, 102.1 in June and 229.5 in August last year. Shipments in August were considerably under those of the previous months, but unfilled orders on producers' books at the end of August gained slightly over those as of July 31. The index of gross orders is based on average monthly shipments for 1922, 1923 and 1924 equals 100. Orders jumped in June, but have dropped in the last two months.

Bookings of Structural Steel Show Decline in August

Structural steel sales in August dropped to 264,000 tons from a total of 284,000 tons in July. The corresponding total of bookings for August last year was 361,900 tons. The tonnage was the lowest for any August since 1924. Orders for the eight months of 1930 totaled 2,116,000 tons which is roughly 20 per cent below the corresponding total for 1929, barely below for the corresponding period of 1928 and slightly above the eight-month total for 1927. Shipments in August amounted to 280,000 tons compared with 288,000 tons in July. August bookings were at the rate of about 66 per cent of plant capacity.



Tons	1930	1929
August	264,000	361,900
July	284,000	350,350
June	276,000	342,650
May	296,000	342,650
Apr.	236,000	334,950
Mar.	248,000	354,200

WHERE TO FIND METAL CONGRESS REPORTS

IN THIS issue STEEL presents a number of reports on the Twelfth National Metal congress and exposition, which was held last week in Chicago. Additional accounts of important papers and discussion will appear in subsequent issues.

A special effort has been made to arrange the reports for the convenience of readers. For the executive who wants a bird's-eye view of the week's activities, we offer a concise story on page 23. For readers interested primarily in the technical program, we present a group of articles each based on an important phase of metallurgy or engineering.

Instead of a detailed description of the exhibits, we have prepared a critical analysis of the show in an effort to emphasize the significance of its many features.

As a frontpiece to these articles we publish a 4-color reproduction of a study in water color of the tapping of an open-hearth furnace. Its title "Steel—Basic to Industry" is appropriate, inasmuch as the activities of last week's convention and show revolved around that master metal—steel.

For convenience, the following index of National Metal congress reports is published:

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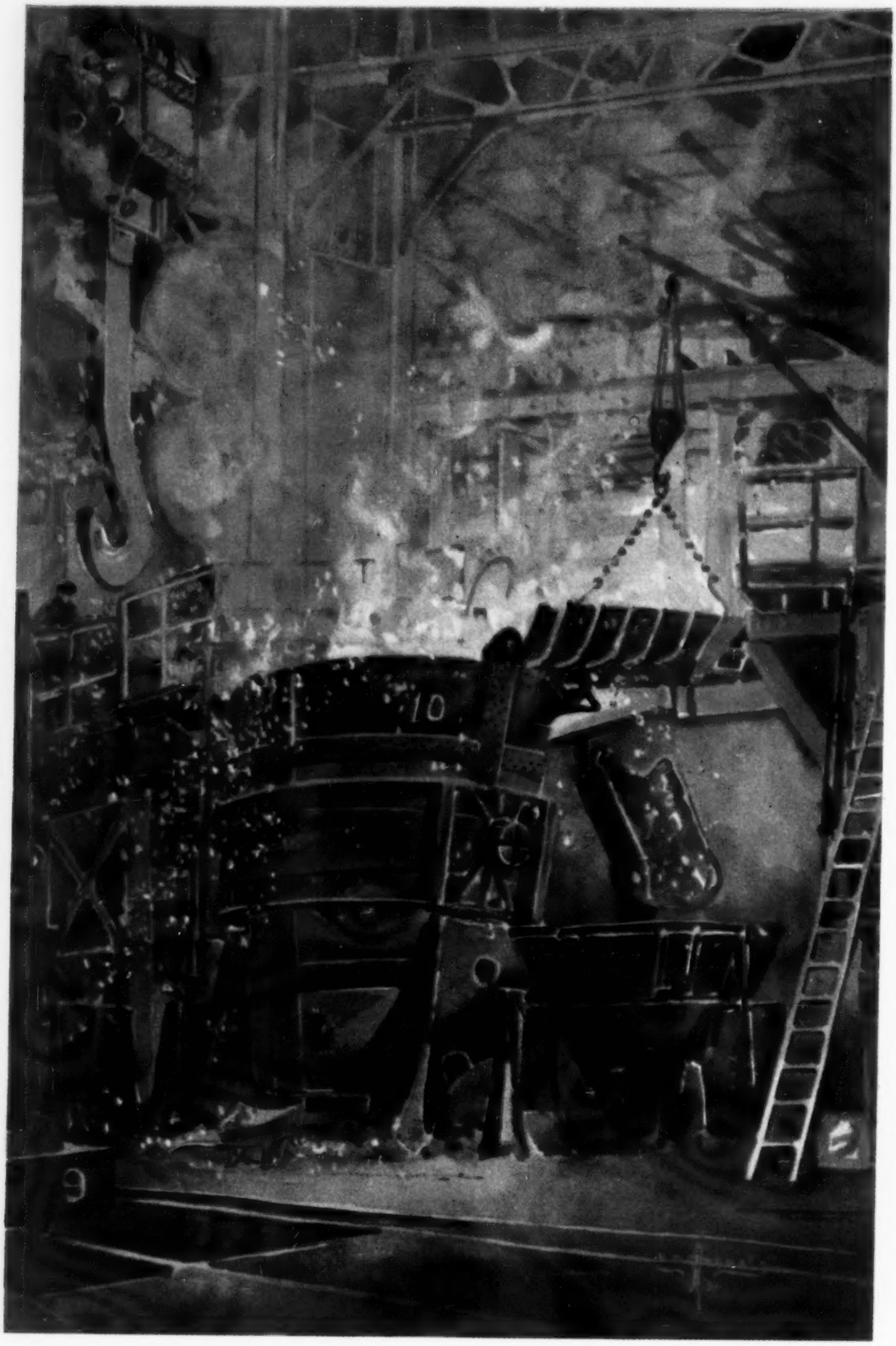


By E. D. McDonald

STEEL—BASIC TO INDUSTRY

Study in Water Color of Tapping of Open Hearth

Corrosion-Resisting and Nitriding Steels Show Marked Advance

Only Recently Developed but Persistently Studied, These Alloys Find Wide Application in Industry—Fabricating and Processing Equipment Keeps Pace

OF the eight technical sessions conducted by the American Society for Steel Treating during its annual convention in connection with the National Metal congress in Chicago, Sept. 22-26, those being most noteworthy were one dealing with chromium and chromium-nickel heat, acid and corrosion-resisting alloys and a second devoted to nitriding steels and the nitriding process. Both of these sessions were arranged to focus attention on subjects which are comparatively new and on which industry is clamoring for information. Excluding high-speed tool steel, perhaps no steel has received such wide acceptance in so short a time as has the corrosion-resisting type. As a result of research and investigation, many difficulties in application and fabrication of this material have been overcome. Progress made in nitriding is equally as marked but, because of the nature of the process, is less spectacular.

EXTENSIVE research on the effect of nickel on the chromium-iron-carbon constitutional diagram has disclosed that successive additions of nickel to 18 per cent chromium alloys widen the temperature range in which austenite is stable and also the range of carbon content in which austenite alone is the stable phase; however, the additions narrow the range of carbon content in which the stable structure is an association of ferrite and austenite. Substantiation of these statements was contained in a paper presented by V. N. Krivobok, Carnegie Institute of Technology, Pittsburgh, reporting work carried out in co-operation with M. A. Grossmann, director of research, Republic Steel Corp., Canton, O.

In compiling data for this investigation the authors examined the effect of successive additions of nickel upon the microstructures of 18 per cent chromium irons with various carbon contents. The alloys so examined were called 18-2, 18-4, 18-8 and 18-12, in each group several carbon contents being included, ranging between 0.05 and 0.60 per cent. The alloys were heated at various temperatures from 800 to 2500 degrees Fahr. and examined for microstructure, magnetic properties and hardness.

The appearance of five distinct structural phases was noted in these corrosion-resisting alloys studied, the first, alpha ferrite, containing carbon in solution; the second, delta ferrite containing carbon in solution, the third, austenite; the fourth, carbides, complex alloy carbides corresponding in behavior but not in composition to iron carbide, and believed to contain from 30 to 60 per cent chromium and from 5 to 20 per cent nickel; and fifth, liquefied metal, a characteristic structure of high-carbon materials which have become molten in the higher temperature ranges.

Alloy Cast Irons Studied

As a result of work which has been in progress several years under the direction of J. S. Vanick and P. D. Merica, International Nickel Co., New York, making possible the detailed survey of the various characteristics of nickel-copper-chromium cast irons as well as revealing a composition range most suited for general service, an alloy iron containing 12-15 per cent nickel, 5-7 per cent copper and 1.5-4 per cent chromium was found to be most suitable for varied requirements of physical properties and corrosion resistance. In a paper the authors outlined the results which could be expected from this iron in comparison with plain cast iron.

This iron, known more familiarly perhaps as monel metal, can be produced in the ordinary cupola and can be molded, cast and handled in foundry and machine shop under conditions similar to those in practice for plain gray iron. The remarkable resistance to growth which the iron possesses was pointed out by H. A. Wadman, Hartford-Empire Co., Hartford, Conn., who corroborated other qualities mentioned by Vanick and Merica. Due to the iron having practically the same coefficient of expansion, about 0.000018 inch per degree Cent., as aluminum piston alloys, its use in this connection, although still in the experimental stage, has been found entirely suitable, according to R. S. Archer, Aluminum Co. of America, Cleveland. In answer to a question as to wear tests, Mr. Vanick declared that the iron on dry brake shoe tests showed

a wear of five times that of ordinary brake drum iron in a corresponding test.

Description of a corrosion test for research and inspection of chrome-nickel alloys was presented in a paper by William R. Huey, E. I. DuPont de Nemours & Co., Wilmington, Del. The need was indicated for an accurate corrosion test for alloy steels. The trend of development of alloys appears to point to a slight variation in chemical compositon and closer control of heat treatment. To evaluate the effects of minor changes such

(*Concluded on Page* 75)

Nitriding Speeded by Use of Packing Materials

FURTHER advances in the science of nitriding are being made constantly and one of the newest strides is a method of nitriding which consists essentially of packing the work to be nitrided in suitable finely divided materials. These are inert to the reaction and may be non-metallic or metallic, magnesia, copper and prenitrided nitriding steels being effective. This method of nitriding was explained in a paper by A. B. Kinzel and J. J. Egan, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

The nitriding is carried out as usual in ammonia but less time is required for a given depth of case, corrosion-resisting cases having been produced by this method in four hours. The packing materials also act to give uniform nitriding, making the process independent of the condition of the container and circulation of the ammonia. The use of packing materials is applicable to both chromium-aluminum (nitralloy) and chromium-vanadium nitriding steels and due to the several advantages already mentioned the process should find ready commercial acceptance, according to its proponents.

Containers Are Enamelled

For longer life of nitriding containers and low initial cost, the carbon steel container enamelled on inner surfaces presents excellent possibilities, according to determinations of Robert Sergeson and H. J. Deal, metallurgical laboratories, Republic Steel Corp., Massillon, O., who also declared that nickel-copper-chromium metal lined containers although more expensive presented a second promising material for nitriding containers. Further investigations by these authors revealed that nitrided chromium-aluminum steel is not adapted for use in acid solutions such as sulphuric or hydrochloric. It is found to be extremely resistant to alkali, atmosphere, crude oil, ethyl gasoline, natural gas combustion products, tap water and still salt water.

Regarding denitriding, these authors disclosed that the process is dependent upon the temperature and time and not the media; that the lower hardness of a denitrided case is the result of an appreciable loss of nitrogen content; that denitriding at temperatures above 1400 degrees Fahr. is accompanied by a marked diffusion of case toward the center; and that in order to obtain high or maximum surface hardness by subsequent nitriding, it is necessary to remove entirely all of the denitrided case.

Contradictory evidence regarding enamelled inner surfaces of nitriding containers was introduced by J. H. Higgins, Camden Forge Co., Camden, N. J., who mentioned "sad results" obtained with structural steel containers enamelled on the inner surface. Mr. Higgins also discussed proper seals for nitriding containers and intimated that Rose metal was one of the best obtainable.

Nitriding of large forgings can be accomplished with every degree of safety and satisfaction as experienced on small forgings although care must be used in selection of material, forging, heat treating, machining, normalizing and piling in the box. Investigations by J. H. Higgins, mentioned above, on this subject were reported in a paper by Mr. Higgins. Growth appeared to be progressive in forgings ranging in size from 3 to 12 inches in diameter and was approximately a quarter of a thousandth for the smaller size to two thousandths for the large size. Careful preparation of materials eliminates distortion, while close temperature ranges in the box assures uniform hardness. Size of work capable of being nitrided is limited by the largest good ingot which the steelmaker can produce, declared Mr. Higgins.

Mr. Sergeson claimed experiments which he had made showed that solid sections have the same growth regardless of cross section and this growth is dependent on the depth of the nitrided case. Three factors influencing quality in nitriding—position of the steel in the furnace, temperature control, and the flow of ammonia were brought out by J. W. Harsch, Leeds & Northrup Co., Philadelphia.

Demands of the industry for continuous nitriding furnaces have led to the development of such equipment, described in a paper by W. J. Merten, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. The equipment consists of two pairs of stationary twin containers heated by two removable bell type electric furnaces.

One bell furnace serves alternately two containers, thereby approaching continuity of operations as well as introducing economical features of great importance. The equipment is designed to reproduce practically conditions essential for obtaining consistently uniform and selective quality of product. However, a poor product will result if careful attention is not paid to the design of nitriding boxes, as pointed out by J. C. Woodson, Westinghouse Electric & Mfg. Co., who stated that welded nickel boxes supported in structural steel frames are one of the newest developments. Tfiese boxes are supplied with flanged covers which rest in a deep lead seal around the top of the box. Immersion heaters are located in the lead seal to bring the seal to a molten condition while the box may be still cold.

Microcharacter Hardness Tester

Difficulties in accurately measuring the hardness of a nitrided steel are now surmountable with the use of a machine described by C. H. Bierbaum, vice president, Lumen Bearing Co., Buffalo. The unit is known as a microcharacter hardness tester and will test crystals of metal, thin sections and other polished metallic surfaces. The method of operation consists in moving a jewel point over the polished and lubricated surface of a metal section under microscopic feed, at a given angle and with definite pressure; then measuring the width of cut and determining a so-called comparative hardness figure. The machine is the result of 15 years' development work by Mr. Bierbaum, employing at first an artificial sapphire point, later found to be unsuitable as it wore down too quickly. Correctly ground diamond crystals are now available and are the best jewel point to use. Accurate grinding of the jewel insures sharpness at 2000 diameters magnification. The jewel in the form of a cube with one corner doing the cutting is moved at an angle of 35.25 degrees of incision, the load on the jewel varying from 3 to 9 grams, according to the metal. A microscope capable of measuring a width of cut of as small as 1 micron is an integral part of the setup.

Mr. Bierbaum pointed out that in testing a sample of nitrided steel he detected a preliminary soft surface layer of metal before the super-hard case was reached. As an instance of the precision of the work it was shown that the depth of cut was of a magnitude of only 0.0007-inch.

A new era of hardness testing was seen as resulting from the further application of the microcharacter hardness machine by Mr. Kinzel, commenting on Mr. Bierbaum's paper.

Exposition Reveals Advance in Materials, Methods

AFTER carefully noting the numerous exhibits at the National Metal exposition in Chicago this writer could not help but think of the amazing progress that has been made recently in the development of steel and nonferrous products and of methods for transforming them into articles useful to civilization.

If you will think back to 1905—only a quarter of century ago—you will recall that steel was available in comparatively few forms. The nonferrous metals were still in limited use. Heat treating, as we now know it, was non-existant. Many of the elements now used for alloying were known, but their use for that purpose was limited. Methods of rolling, casting, and otherwise shaping metals were primitive—according to present day standards. Welding was little more than a blacksmith's trick, and machine shop practice, while developed to a fair degree of efficiency as far as individual machines were concerned, had not yet been adapted to the requirements of mass production.

Today many of the restrictions of 1905 do not exist. The Chicago show indicated clearly that the designer is offered a choice of hundreds of steels and nonferrous metals to suit his requirements and that the manufacturer has the option of numerous methods for fabricating and treating these materials.

It seems safe to say that steel was exhibited at last week's show in more varieties of analysis, heat treatment and form than at any previous exposition in this country. This was true not only of ordinary carbon steels, but of many simple and complex alloy steels, of numerous recently developed corrosion-resisting steels, of many improving cutting metals and also of a number of special steels for other purposes. To this writer the outstanding feature of the entire show was the emphasis placed on alloy steel.

18-8 Steels Are in Limelight

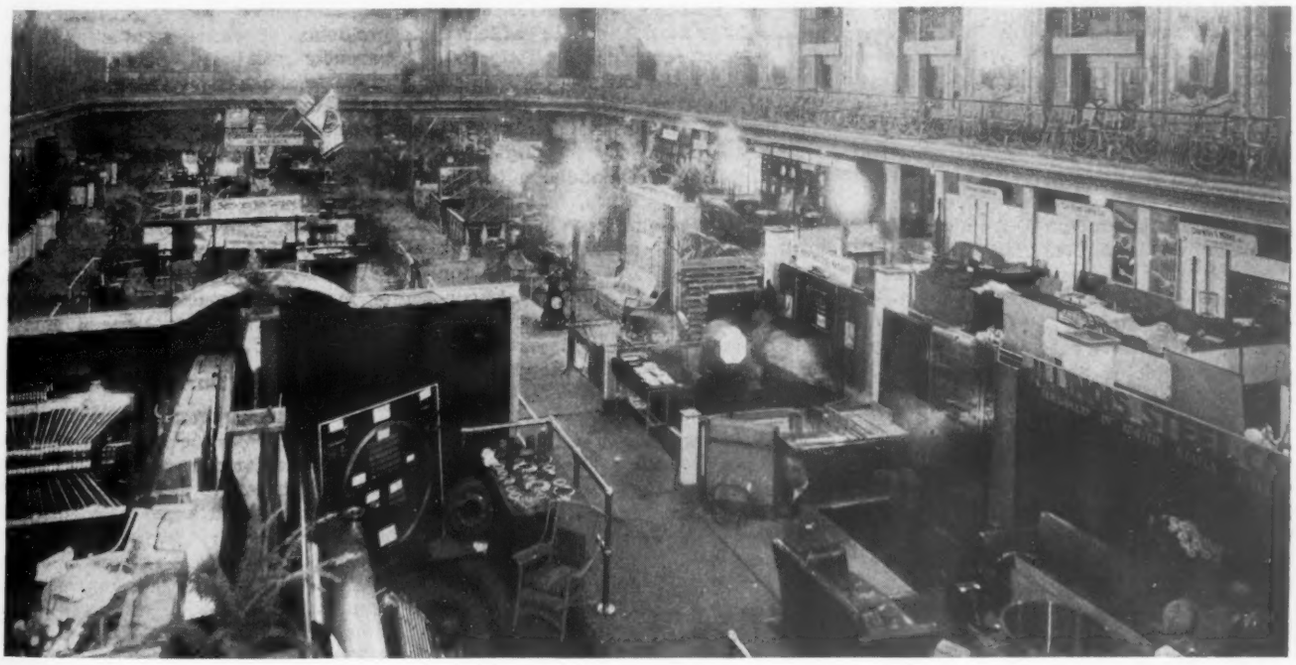
For instance, at last year's exposition three or four exhibitors displayed corrosion-resisting alloys. This year not less than 15 companies exhibited products made from this type of alloy. The exhibitors included the largest producers of steel in America—companies which have grown to greatness largely through the sale of carbon steel. That these steelmakers now are placing so much emphasis on alloy steels is significant. It indicates that the managements of these corporations foresee an important swing toward alloy steel in the near future.

The exhibits of the so-called 18-8 steels were a revelation in that they indicated the broad application of these alloys in many industries. It also was apparent that this material —first available only in sheet and bar form—now can be obtained in many shapes and products. In fact, the displays, when considered in contrast with those a year ago, testify to the great amount of development work that has taken place in 18-8 alloys during the past 12 months.

While the chromium-nickel alloys of the 18-8 analysis seemed to predominate there were numerous other corrosion-resisting alloys on display. Chromium steels were in evidence in several booths, and chrome-nickel steels for resistance to heat were shown by several exhibitors. One company demonstrated a new cobalt magnetic steel. Steels adapted to the nitriding process of hardening were very much in evidence.

Exhibits of tool steels and other cutting materials showed that rapid changes have taken place in the development of these alloys since the time of the last exposition. Tungsten-carbide tools have been known for several years but in the United States interest in them dates back to the Philadelphia convention when Dr. S. L. Hoyt spoke on the possibilities of this cutting material.

Since that time tungsten-carbide tools have been tried on many materials and under every conceivable condition of service. The experience gained has proved the material admirable for many kinds of work. The acceptance of tungsten-carbide has been responsible for changes in the design of machine tools and has hastened and stimulated the development of better tool steels and other cutting materials. In fact, the de-



Manufacturers of steel and steel products for the most part occupied space in the spacious Stevens hotel ballroom

velopments of the past three years in cutting alloys compares favorably with the progress in corrosion resisting alloys in the same period. Certainly the exhibits at Chicago of carbon, tool and high-speed steels, as well as other alloys for cutting metal indicate an intensity of activity that has not been witnessed since the days when high speed steel was first being introduced.

The exhibits of castings by steel foundries gave one the impression that perhaps this branch of the foundry industry will tap an important market with its alloy, heat-treated products. In this day of keen competition a casting having no particular distinguishing feature is at a disadvantage. The castings shown by the group of steel foundries—possessing as they did the advantages of heat treating as well as those of alloying—seemed to point the way to opportunity for many foundrymen.

Exhibitors of forging and dies indicated that considerable progress has been made in this field. With better steels to work with and with improved knowledge of forging and heat treating process, coupled with more efficient equipment, these manufacturers have made a marked advance in the quality and versatility of their products. A number of displays were particularly instructive as to the intricate sections now possible of production through modern forging practice. As in the case of rolled steel and castings, forgings displays reflected the trend toward increased use of alloy steels.

Die Castings Are Impressive

That steel alone cannot fulfill all the needs of industry was impressively demonstrated by the exhibits on other metals. For instance the displays of die castings indicated that here is a product especially adapted to many articles which can compete with any other metal or process.

The rise of aluminum in recent years has been spectacular, but perhaps the most significant advance has been during the past year when this light-weight metal has been made available in structural shapes. Aluminum and its alloys also were shown in many other forms, indicating that the producers of these materials are prepared to extend their application into many fields. The use of aluminum already has spread far beyond the limits of the vision of those, who even a few years ago, were accused of being too optimistic over the future of these interesting nonferrous alloys.

Plain Bearings Exhibited

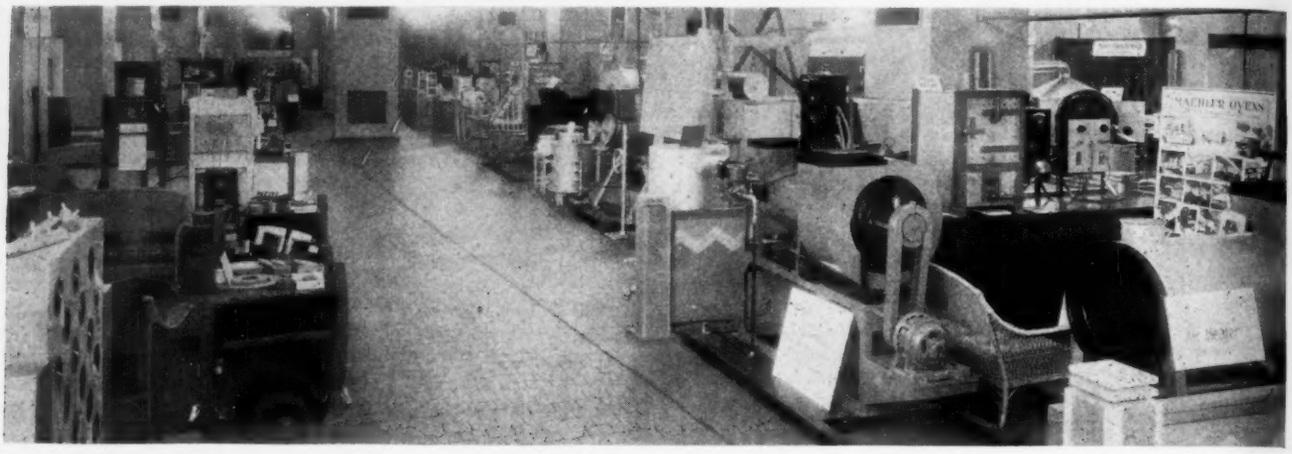
Plain bearings, exhibited by a number of producers of nonferrous metals, showed that for many purposes this type of bearing is supreme against the encroachment of antifriction bearings.

Perhaps no process has attracted more attention in recent years than that of welding. The exhibits of welding equipment and supplies constituted a well-balanced show, in which a dozen or more companies participated. While space limitations prevented demonstrations on a large scale, the exhibitors succeeded in showing what can be accomplished by welding in an effective manner. In addition to the usual welding machines, this year a number of special purpose units were shown, including several spot, butt and flash welders and a machine for welding "battledeck" floors. A carbon arc welder was used in an interesting demonstration. Oxyacetylene welding and cutting received much attention and samples of thermit welded articles were shown. The exhibits of welding wire indicated that developments in this department of welding are progressing along more intelligent lines than they were a few years ago when the welding fraternity as a whole was somewhat uncertain as to what were the desired properties in wire for certain purposes. The entire welding exhibition gave the impression that the industry is on a sounder basis of development than they have been previously.

Several years ago the design of heating and heat treating furnaces was in a transition stage. Radical changes were announced in rapid succession. In many respects, this feverish activity has died down and today a number of improved designs have found such wide acceptance that progress now is in refinement of details more than in the introduction of radical design.

This fact was emphasized in the displays of the furnace builders in Chicago. It was reflected not only in the gas-fired units but also in the electrical equipment. Space prevented the operation of furnaces, but this did not seem to be a handicap. The progress made in the equipment was as readily discernible as if the equipment had been in operation.

In the gas section, improvement was evidenced in combustion and control but perhaps more so in the adaptation of furnaces to special problems of mass production. Apparently much attention has been given to the methods of handling material to and from the furnaces. In fact some of the installations pictured give the impression that the furnace itself is incidental to the heat treating system as a whole. This is as it should be, and marks the development of equipment according to the prevailing practice in machine tools, or in fact any machinery designed to fit into the scheme of mass production.



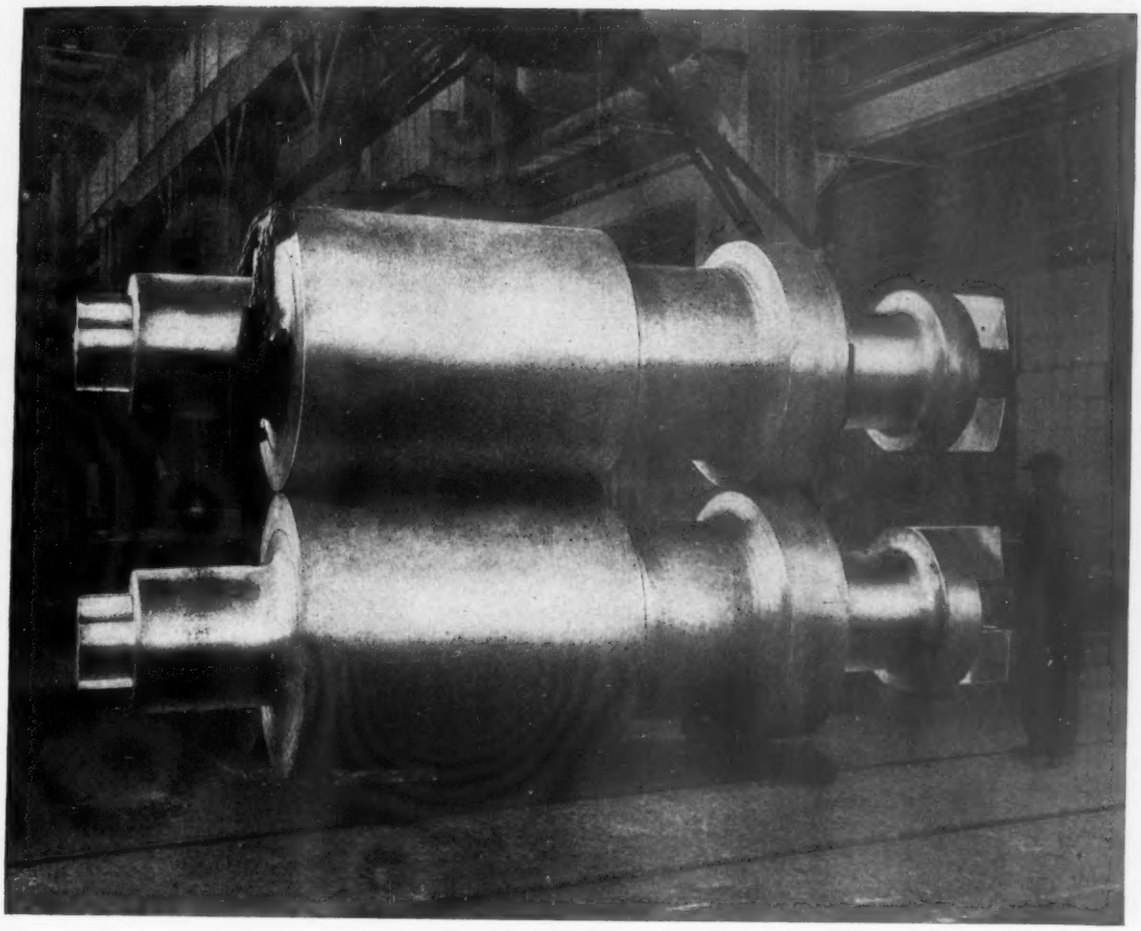
Heavy equipment including furnaces, burners and welding equipment, was attractively displayed in the exhibition hall

Nitriding Furnaces Shown

The same tendency is apparent in oil-fired and electric furnaces. In the case of the former considerable attention continues to be given to regulating valves and burners. Among the exhibits of electric furnace equipment and accessories were several units designed for the nitriding process. An ammonia dissociation attracted attention.

The automatic feature was noticeable in many of the displays. While

World's Largest Blooming Mill Rolls Recently Made by Mesta



57" diameter, 120" body length, 18'-3½" total length. Weight in Rough 105,000 lbs. each.

Mesta

Mesta Machine Company
Pittsburgh, Penna.

heat treating furnaces seemed to dominate the furnace section, there were numerous heating furnaces for billet and sheet mills. This equipment has been improved to a marked extent in recent years.

Electric furnaces for melting steel or nonferrous metals have always been exhibited at the metal shows. This year induction-type furnaces were in evidence, one of high-frequency design proving especially attractive to visitors.

The layout of exhibits in a hotel gave manufacturers of instruments an unusual opportunity to display their products effectively. The apparatus for furnace control, meters, etc., were attractively shown. This also was true of testing apparatus, which appeared to good advantage.

Supplies for heat treating, including carburizing compounds, salts, oils, inhibitors, refractories and insulating materials were shown by a dozen companies.

While the National Metal exposition is not primarily a machine tool show, a visitor at Chicago last week could not pass through the aisles without taking away with him some definite ideas of the trend in machine design and of developments in machine shop practice.

Used for the first time for exhibition purposes, the main dining room, foyers and lounge were filled with exhibits of metallurgical equipment

Abrasive Wheels Improved

There was abundant evidence that two laboratory products have resulted in many changes in the art of machining metals. One of these—the abrasive wheel—has been gaining favor for many years and the exhibits at Chicago, while reflecting this progress also showed how manufacturers of these disks have kept pace with another new development—namely, tungsten carbide tools.

One of the first difficulties encountered with tungsten carbide tools was that of dressing them. European and American abrasive wheel manufacturers accepted the challenge and within a short time had solved the problem. Wheels for dressing and sharpening the hard tungsten-carbide were exhibited as were also wheels for many other purposes.

The possibilities of tungsten carbide—the second laboratory product—were demonstrated on a powerful turret lathe and were also illustrated by a "still" exhibit of numerous formerly unmachineable products which now are easily shaped by this new material. Improved tools of stellite and cast tungsten-carbide also were shown.

Industrial applications of flexible shaft machines were demonstrated. Filing, polishing and chipping operations are expected by this form of power transmission, which while not new, has until recently been neglected as an industrial tool.

Drilling machines, "nibblers," punches and shears, hack-saw machines, abrasive cut-off machines, jig borers, drop hammers and polishing machines were included in the numerous exhibits of machine tools and plant equipment.

A die casting machine was the central feature of one exhibit. This unit was self-contained, and designed primarily for the sole use of its builder, it now is on the market for others. Numerous accessories such as templets, vises, clamps, lock washers, drills, reamers, etc., were in evidence at the show.

As a whole, the exposition compares favorably with the best of its predecessors, in spite of the fact that space was somewhat limited. Many visitors commented on the convenience resulting from having the convention sessions and the exhibits under a single roof. Sales of equipment and supplies were gratifying, according to the statements of many exhibitors.

Convention Calendar

Oct. 6-7—Associated Machine Tool Dealers. Annual meeting at Hotel Aspinwall, Lennox, Mass. A. G. Bryant, 2558 West Sixteenth street, Chicago, is secretary.

Oct. 8—Gray Iron institute. Third annual meeting at Hotel Cleveland, Cleveland. Arthur J. Tuscany, Terminal Tower building, Cleveland, is manager.

Oct. 13-17—American Gas association. Annual convention and exhibit at Auditorium, Atlantic City, N. J. Kurwin R. Boyes, 420 Lexington avenue, New York, is secretary.

Oct. 20-22—Concrete Reinforcing Steel institute. Semiannual meeting at Briarcliff lodge, Westchester county, N. Y. M. A. Beeman, 2112 Tribune Tower, Chicago, is secretary.

Oct. 20-23—National Hardware Association of the United States. Annual convention at Marlborough-Blenheim hotel, Atlantic City, N. J. George A. Fernley, 505 Arch street, Philadelphia, is secretary.

Oct. 20-23—American Hardware Manufacturers association. Annual meeting at Marlborough-Blenheim hotel, Atlantic City, N. J. Charles F. Rockwell, 342 Madison avenue, New York, is secretary.

Oct. 20-23—Association of Sheet Metal Distributors. Annual meeting at Marlborough-Blenheim hotel, Atlantic City, N. J. George A. Fernley, 505 Arch street, Philadelphia, is secretary.

Oct. 24—American Refractories institute. Fall meeting at Traymore hotel, Atlantic City, N. J. Dorothy A. Texter, 2218 Oliver building, Pittsburgh, is secretary.

Oct. 24—American Iron and Steel institute. Semiannual meeting at Hotel Commodore, New York. E. A. S. Clarke, 75 West street, New York, is secretary.

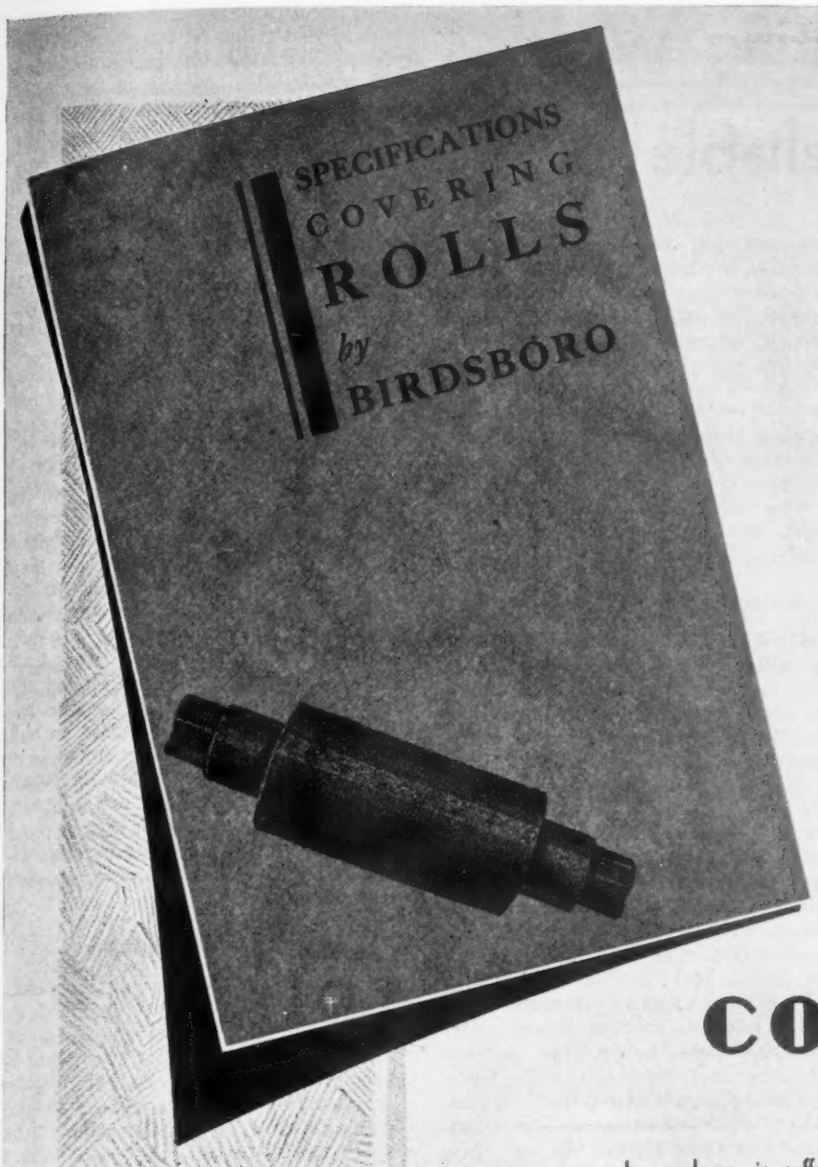
Oct. 24—Rail Steel Bar association. Semiannual meeting at Hotel Commodore, New York. H. P. Bigler, 228 North LaSalle street, Chicago, is secretary.

Oct. 27—American Institute of Steel Construction. Annual meeting at Pinehurst, N. C. Charles F. Abbott, 285 Madison avenue, New York, is executive director.

Coast Fabricator Expands

Consolidated Steel Corp. Ltd., 1200 North Main street, Los Angeles, formed in February, 1929, from the former Llewellyn Iron Works, Baker Iron Works and Union Iron Works, has acquired a site at Slauson and Eastern avenues, Los Angeles, on which to erect a new structural plant.

Acquired land comprises 50 acres, and in addition the company has obtained an option on an adjoining 25 acres. Plans call for demolition of a part of the Baker company plant west of Broadway, salvage of the present Union Iron Works unit, and construction on the acquired site of a large fabricating shop.



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Methods for Testing Welds Proving More Reliable

QUALITY of welded joints and testing procedure to determine efficiency nondestructively are subjects always evoking extended discussion when members of the welding fraternity convene. In the infancy of the industry lack of test methods impeded acceptance of welding. Even today no universal tests can be applied, but satisfactory performance of welded structures has establisehd a confidence thereby permitting wide application of the various processes. During this period technique has improved, physical properties of welds have been raised and considerable has been achieved in the line of testing and inspection. It is not surprising, therefore, to find that the American Welding society, in its fall meeting in Chicago, Sept. 22-26, should devote much of its time to these questions.

In a symposium under the sponsorship of the American Bureau of Welding, J. W. Owens, engineering director, Welding Engineering & Research Corp., New York, submitted tensile test recommendations for consideration of the committee on standard tests for welds. He mentioned that the values for ultimate stress, yield point, per cent elongation and reduction in area should be determined separately for the base and weld metals by the use of round specimens and suggested a specimen having a diameter of 0.505-inch and a gage length of 2 inches. Where this is impractical, he stated, any diameter of specimen may be used provided the gage length is four times the diameter.

Special Shape Suggested

The value for fusion for both brittle and tough welds should be determined by a rectangular specimen transverse to the joint, with parallel sides and edges, having the weld section locally reduced 25 per cent in width by a curved reduction at the edges of the specimen, the radius of curvature being four times the width of the reduced weld section. Continuing, he stated the base metal used in the preparation of test specimen for welds should have the same properties as that used in the structure on the class of work for which tests are made. Lastly, he stated, the use of swivel holders should be required for testing the round weld and base metal specimens.

W. B. Miller, metallurgist, Union Carbide & Research Laboratories, Long Island City, N. Y., in outlining the present status of the bend test, mentioned that the consistency of the results is excellent and constitutes a main advantage. For homogeneous material, he explained, similar specimens of the same material not only give the same results, but the same material when tested in various thicknesses gives the same results showing that the test measures inherent properties of the metal. Any inconsistencies in results of weld tests may be due to weld irregularities, he stated, rather than to any unreliability of the method.

Fatigue Strengths Measured

Data on the fatigue strength of butt and fillet welds and the impact strength of butt welds and arc-deposited metal were presented by C. H. Jennings, research engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Fatigue strength of butt welds, he said, is shown to depend upon the type of joint and the specimen used; fatigue strength of fillet welds is affected slightly by the size of the weld and by machining the radius at the base of the fillet. He directed attention to the fact that impact values for arc-deposited metal are higher than those obtained from welded joints, according to test data. Annealing welds below 1550 degrees Fahr., he explained, has little effect upon their impact strength, while annealing above this temperature greatly reduces their impact values.

In discussing the use of gamma rays for examining welds, G. Doan, assistant professor of physical metallurgy, Lehigh university, Bethlehem, Pa., pointed out that the radium apparatus may consist simply of a capsule about the size of a 22-caliber cartridge containing the source of rays. The portability of such a capsule would allow it to be used in such places as the top of a partly constructed bridge of skyscraper, the interior of complex steel framework or even under water. It is possible, he explained, to radiograph welds in places inaccessible to the usual radiographic apparatus. Exposures can be made at night and since the rays are emitted in all directions from a source, time and cost may be minimized by placing a large number of test objects about the source and taking a dozen or more photographs simultaneously.

A paper on the quality of welded joints and testing procedure to determine the properties of joints in pressure vessels by J. C. Hodge, metallurgist, Babcock & Wilcox Co., Barberton, O., prompted wide discussion. The nondestructive test or exploration of every inch of the main welded joint of a pressure vessel was acclaimed by the speaker as the most important factor in the testing procedure. As an accessory to the physical test specimens, which offers only a means of determining the physical values of the samples of the welded joints, he contended, the nondestructive test method gives a close examination of the welded joint, so that it is impossible for dangerous sections to be presented in the welded joints of the drum.

Development work on apparatus suitable for this method of testing has been concentrated on fissure detection by electromagnetic means and by the X-ray method. The latter method of examination can be used to explore every portion of the main longitudinal or circumferential joints of a welded pressure vessel at an estimated cost of 30 cents a foot for ½-inch plate, 38 cents a foot for 2-inch plate and $2.63 a foot for 3¼-inch plate. The radiographs are made with a standardized technique, the voltage applied to the tube and the time of exposure being chosen to suit the wall thickness. For thicknesses of 2 inches or more, 210,000 to 220,000 volts are used and the time of exposure chosen to give a satisfactory view. For smaller thicknesses an exposure of 2 minutes and a reduced voltage is used.

Direct Current Employed

In testing by electromagnetic means the shell to be explored is placed on a movable platform, the speed of which can be adjusted. The drum is brought into contact with two brushes attached to the cross beam of the frame so that the welded joint of the shell lies between. A heavy direct current is brought into the brushes and passes through the welded joint. The current in the welded plate sets up a magnetic field around the plate and as the shell travels under the brushes, any deviation or distortion in the direction of current through the plate in passing around flaws or defects within the welded plate causes a corresponding deviation in the direction of the magnetic field around the plate. The changes in the direction of the magnetic flux around the plate are detected and measured by a balanced coil unit, the changes in the current of which are amplified to control relays for the operation of the recording apparatus.

Henry Hobart, consulting engineer, General Electric Co., Schenectady, N. Y. in a written discussion, pointed out that macroscopic and microscopic examination and fatigue tests and chemical analysis are undesirable, that tensile, bend and impact tests are valuable and that density of weld metals and X-ray examination are advantageous in the examination of fusion welded pressure vessels.

Results of an investigation of tub-

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ing made from strip steel in which the longitudinal seam was welded by a special adaptation of the electric resistance welding process were presented by J. S. Adelson, chief metallurgist, Steel & Tubes Inc., Cleveland, who as co-author with E. O. Sequist and H. L. Whittemore, bureau of standards, Washington, spoke on "Physical Properties of Electrically Welded Tubing." The strength of the weld practically was equal to the strength of the base metal, the results showed, despite the fact that a small percentage of the tubes broke in the weld under some of the testing conditions.

Tests Unaffected by Seam

A great majority of the tests described by the speaker were not affected by the presence of the welded seam. Except in the case of swaged-annealed tubing, he stated, the properties of the base metal (the metal not affected by the welding operations) can be used in determining the working stresses for different structural uses of tubing made by the process used in the manufacture of this electrically welded tubing. No allowance is necessary for the altered structure in and adjacent to the weld. The properties at or near the weld for annealed tubing sometimes are slightly lower than the properties for the base metal, he concluded.

Testing welds by measuring magnetic potentials is more nearly free from personal judgment and more quantitative than the magnetographic or other methods of inspection according to T. R. Watts, Westinghouse Electric & Mfg., East Pittsburgh, Pa., who spoke on "Magnetic Testing of Butt Welds." While this method appears to be at least as applicable and reliable as any other nondestructive weld test method known, he stated, precise predictions of strength are not to be expected, especially for welds of 75 per cent efficiency and better.

No general definite relationship between strength and magnetic properties of steel is known, he declared, and slight differences in composition or heat treatment may alter the magnetic property greatly, without appreciable effect on the strength. The author described experiments with the magnetographic method of inspection and suggested improvements in the apparatus and methods used for making and recording the iron filing leakage-flux pictures of welds.

The diffraction or interference method of using X-rays in the study of problems dealing with metals has to do with the atomic arrangements in metals and alloys and the size and orientation of the individual crystals, according to J. T. Norton, department of metallurgy, Massachusetts Institute of Technology, Cambridge, Mass., in discussing "The Examination of Welds by the X-ray Diffraction Method." A special condition of the granular structure, called preferred orientation, appears in cold work from processes which are of a directional nature, the speaker contended.

As the metal is reduced in size, the deformation of the grains is accompanied by a rotation so that eventually the crystallographic axes of the grains becomes essentially parallel. This situation can be studied satisfactorily by diffraction pictures, the author explained. In fine grain metal where the grains are oriented in a random fashion, the resultant pattern is composed of a series of concentric rings. If the material is fine grained but only one or two orientations are present, the pattern consists of only six segments of the rings, he stated. These segments may be short as to be mere spots, depending upon the completeness of the parallel orientation.

The appearance of asterism in X-ray diffraction pattern is of the greatest importance in showing the presence of internal strains in metal samples such as castings and welds, the author pointed out. One can determine in what proportions these strains exist and to what extent they have been eliminated by recrystallization. In conclusion, he described the results obtained from a typical welded sample.

Endurance Limit Varies

In discussing a series of investigations made to determine the endurance limit of butt joints made by different welding processes, G. E. Thornton, State College of Washington, Pullman, Wash., pointed out that welded specimens made from firebox steel do not equal the endurance limit of that material unwelded. Reasons advanced by the speaker included the nonhomogeneous structure due to oxide spots and pits caused from gas inclusions, difference in grain structure between the metal in the weld and that in the original bar, and, difference in hardness between the metal in the weld and the metal in the original bar.

The oxide spots and pits caused from gas inclusions during the welding operations, the speaker declared, never can be overcome by treating the weld whereas proper heat treatment will remedy the grain structure hardness. The speaker emphasized that heat treatment of the weld also will help to eliminate the locked up stresses in the bar which have occurred in the welding operation.

Three new features in connection with side-welded joints, that is, joints in which the welds are disposed parallel to the direction of stress, were presented by W. H. Weiskopf, consulting engineer, New York, and Milton Male, United States Steel Corp., New York, in their paper entitled "Stress Distribution in Side-Welded Joints." The first included a theory as to the manner in which welds deform under shearing loads and, resulting therefrom, a determination of the value of the detrusion ratio, *D*. Second, a means of determining the effective areas of the bars opposing such a joint, that is, the percentage of the total areas that should be considered as transmitting load. And third, a method of determining the length of welds, such that the maximum shear stress will not exceed the average design stress by more than any desired ratio.

Types of Slags Produced Are Important Factors

In present-day blast furnace and open-hearth operation, the types of slags produced are determined by the raw materials charged and the method of operation. In the blast furnace the raw materials charged are the determining factor; in the open hearth the method of operation may be of decided importance in slag composition. The range of slag composition in blast-furnace work is fairly small, covering only a small portion of the ternary diagram lime-silicon-aluminum. In open-hearth operation the major variables in slag composition are calcium-oxide, manganese oxide and iron-oxide. In the manufacture of ferroalloys the slag composition is usually controlled by the impurities in the ores available and the addition of raw materials to give a satisfactory slag.

The development of the high-frequency induction furnace has made it possible to study, with comparative ease, new types of slags. For example, the Metallurgical section of the Pittsburgh Experiment station of the bureau of mines has investigated charges capable of producing ferromanganese where the slag composition is varied far from the limits of commercial operation. Some of the results have indicated that much better operation may be obtained by using an entirely different type of slag from that ordinarily used in ferromanganse manufacture.

Iron Ore Discovery «Greatly Exaggerated»

Reports from St. Paul, Minn., referring to an iron ore discovery and mentioning the M. A. Hanna Co., Cleveland, as developers are greatly exaggerated, according to an official of the company.

"People living in the vicinity of Spring Valley, in southeastern Minnesota, found some ore of merchantable grade," he said. "The company has had representatives in the field examining the extent of the ore but up to the present there are no definite indications that there is an important tonnage. There are no plans whatever for developing, mining or transporting it."

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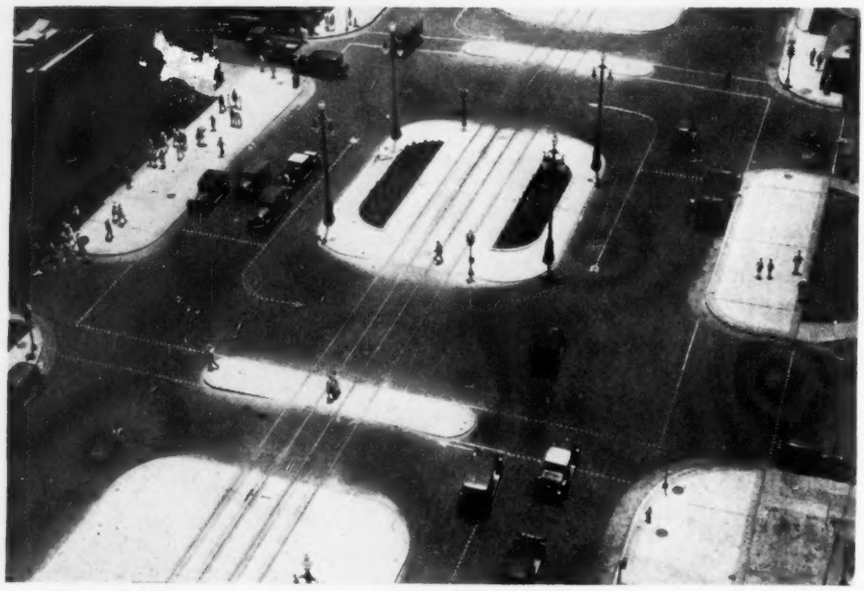


Hundreds of traffic markers are used at this street intersection in New Orleans, the arrangement being typical of that in many other cities. The markers are spaced one foot apart

Large Uses of Steel in Small Ways

175th Article ◆ Traffic Markers

A LARGE tonnage of steel and nonferrous alloys is being consumed annually in the manufacture of traffic markers. These "overgrown thumbtacks" are driven into congested highways to line off safety zones, cross walks, traffic lanes and aisles. Signs also are designed with markers such as "stop," "slow," "danger," "no parking" or any warning which may be desired at a given point. St. Louis has close to 50,000 metal markers. Most large cities are giving the marker a trial. New York's Manhattan, one of the last to seriously consider the use of markers, recently completed an installation of 3000 in Times Square.

Painting Is Eliminated

The steel and alloy traffic guides eliminate the necessity of frequent painting of highway lanes, walks and signs. Paint soon wears away and is discolored. Light reflection is an important factor, and the exposed caps of markers generally are bright and rustproof. Markers are polished by constant wear from the tires.

The markers are simple in construction, consisting of two pieces of metal, the bright finished steel or alloy cap, and a malleable iron base which includes stem and prongs for attachment to the pavement. While made in several sizes, the most popular for highways is 3½ inches in diameter with four prongs, each 1½ inches long. The base is heat treated so that it will not split or crack, yet will allow for expansion of the prongs which spread outward after being driven into the pavement. The cap is crimped to the head of the iron base, taking its dome-like curve. Caps are punched from 24-gage sheets. Some caps are knobbed. One of the pioneer makers of markers uses an alloy for the surface cap.

The weight of a standard 3½-inch highway marker is 15 ounces. The casting weighs 12 and the cap three. Markers are made in other sizes, generally smaller for industrial plant installations. They may be used in any type of floor.

For highways, standard markers are generally spaced one foot apart. Installation of the marker is important. In asphalt, the marker may be driven directly into the crossed marked chalk line, especially in warm weather; but in granite, concrete and other harder surfaces, a hole is drilled, near the same diameter as the stem and prongs and about as deep. The prongs are then spread slightly, a wooden plug inserted in the drilled hole and the marker driven in.

The exact tonnage of steel consumed yearly in the manufacture of traffic markers is indefinite, as the demand is of recent origin and is increasing sharply and a considerable proportion are made of nonferrous metals. One company has several hundred thousand of these markers in service, each cap weighing approximately 1 pound.

Reinforcing Steel Group Plans Semiannual Meeting

Merchandising, promotional and technical topics will comprise the program for the semiannual meeting of the Concrete Reinforcing Steel institute to be held Oct. 20-22 at Briarcliff lodge, Westchester county, N. Y. The general subjects for the three-day meeting will be "Stabilization," "Promotional and Technical Developments" and "Customer Relations." A golf tournament, sightseeing trips and other recreational features are being arranged. The meeting will be adjourned Oct. 22 so that members may attend the meeting of the American Iron and Steel institute to be held at Hotel Commodore, New York, Oct. 24.

The program for the Reinforcing Steel group is as follows:

Monday, Oct. 20

AFTERNOON

General subject: "Stabilization."
President's semiannual address.
"Where Selling Should Stop," by James G. Lewis, eastern manager, Scripps-Howard newspapers, New York.

Tuesday, Oct. 21

MORNING

General subject: "Promotional and Technical Developments."
"Progress Made in Promoting Intermediate Grade Steel," by A. E. Lindau, president, American System of Reinforcing, Chicago.
"Better Residence Construction in Oklahoma City," by N. R. Patterson, president, Patterson Steel Co., Tulsa, Okla.
"Promotional Problems and Future Markets," by Hugh J. Baker, president, Hugh J. Baker & Co., Indianapolis.
"How Goes the Battle?" by Stanley G. Cutler, vice president, Olney J. Dean & Co., Chicago.
Report of forms departments, by Louis Aronstam, chairman, governing committee.

EVENING

Informal semiannual banquet.

Wednesday, Oct. 22

MORNING

General subject: "Customer Relations."
Report of quality marking committee, by A. P. Clark, chairman.
"Bootleg Steel," by Ralph A. Drain, president, Rosslyn Steel & Cement Co., Washington.
"Direct Mill Shipments," by Walter M. Bachtell, manager of warehouses, Truscon Steel Co., Youngstown.
"Standard Weights," by R. W. Johnson, engineer, Concrete Reinforcing Steel institute, Chicago.
"Institute Purchasing Specification for New Billet Steel," by R. W. Johnson.
"Chicago Group Developments."
"Southern Group Activities," by E. B. Wilkinson, president, Southern Reinforcing Service Co., Atlanta.
"Trade Practice Violations—Some Recent Experiences," by Arthur Fisher, secretary, executive committee of trade practice conference.

Must Look Soon to Use of Low-Grade Iron Ores

ASSURED iron ore supplies from the Marquette, Menominee, Vermillion, Gogebic, Mesabi and Cuyuna ranges are restricted to about 20 years, assuming an average of 67,000,000 tons annually should be mined and shipped from now on. This prognostication was made at a session of the iron and steel division of the American Institute of Mining and Metallurgical Engineers, meeting in Chicago, Sept. 22-25. This prediction was made in a paper prepared by F. B. Richards, chairman, Hanna Furnace Co., Cleveland. Beneficiation of low-grade ores must be accomplished in the near future, the speaker warned, to provide an ample supply of iron-bearing material two decades hence.

Benefication Is Hindered

Discussion brought out a statement from E. W. Davis, engineering experiment station, University of Minnesota, Minneapolis, that owing to the low price of pig iron it is impossible to operate ore washing plants at a profit. The speaker, in describing a new cheap process of beneficiating iron ores, mentioned that in the gravity process it is easy to sluff off soft silica but difficult to separate porous hematite from the hard silica. To get around this difficulty, the speaker suggested the use of a magnetic roasting furnace. The price of iron ore must increase 50 cents to $1 a ton before the new method of changing hematite and magnetite can be applied economically, he stated. About one-third of the concentrate will require sintering. In some cases the coarse material can be removed by jigging and the intermediate product roasted. In conclusion the speaker stated that magnetic roasting on the Mesabi range possibly will come as an adjunct to present methods of beneficiation.

Ralph H. Sweetser, assistant to first vice president, American Rolling Mill Co., Columbus, O., in speaking on "Beneficiation of Iron Ores from the Blast Furnace Viewpoint," mentioned that the steel industry is based on a unit of iron and a unit of heat and that the coal industry is faced with the same problem as ore mine owners, in the enrichment of the product. Many undesirable elements are found in foreign ores that are not present in domestic grades, the speaker explained.

Refinement of blast furnace practice will come, he emphasized, when fine ores are screened out at the blast furnace and put through the sintering plant instead of putting them into the stack first and then sending them to the sintering plant as flue dust. Blast furnacemen, he stated, must make up their minds that they will have to use ores of higher silica content. In conclusion, Mr. Sweetser pointed out that the increased silica in ores, generally, has been counterbalanced by a corresponding decrease in the percentage of ash in the coke and by the progress made in the art of smelting iron ores.

In a written discussion of Mr. Sweetser's paper, T. T. Read, American Institute of Mining and Metallurgical Engineers, New York, suggested that it might be of advantage to the blast furnace operator to aim for a proper silicon content in the pig and if the sulphur is too high, to wash the metal outside with a high-lime slag, instead of endeavoring to make the silicon and sulphur contents of the pig right in one operation.

Attention was directed to the irregular distribution of tonnage on the Mesabi range by F. G. Swart, Mesabi Iron Co., Babbitt, Minn. Mesabi ore washed last year, the speaker mentioned, amounted to 6,000,000 tons. That beneficiation or ores from this range has become an actuality, he stated, is evidenced by the fact that all through the business depression the washing plants were in operation while the underground mines remained idle.

Further Data on Ores

In a third paper on "Resistance of Iron Ores to Decrepitation and Mechanical Work," by T. L. Joseph and E. P. Barrett, North Central experiment station, bureau of mines, Minneapolis, a method was described which might be used in selecting ores for mixing in a blast furnace in order to obtain a better gas-solid contact in the stack. Screen analysis of an ore does not indicate its behavior when subjected to abrasion and heat, the speaker contended. Charts thrown on the screen depicted an 18 per cent decrease in the particle size of ore when tested in a cold state compared with 38.1 per cent due to hot work. Imported ores are little affected by cold work, he stated, but are much changed by hot work. In conclusion test data were presented to show that limestone is resistant to cold work and to hot work at a temperature of 1400 degrees Fahr.

A second session devoted to these subjects and intended as a roundtable had more the character of a conference between iron ore suppliers and blast furnace operators as to what each could do to make the work of the other run more smoothly. The ore men, who were mostly from the Lake Superior ranges, told what they were doing in the way of beneficiation of ores by sintering and washing, and suggested that if such treated ores are worth any more to the blast furnace, it would be in order for a somewhat higher price to be charged.

Blast furnace men admitted the ultimate need for beneficiation of low grade ores, but pointed out that recent developments in blast furnace practice make it possible to use certain lower grade ores economically without beneficiation.

The subject of ore concentration came up and something was told of a process being developed in Detroit which is of interest to the Ford Motor Co. Wood waste is used in kilns at comparatively low temperature, and a highly concentrated product results.

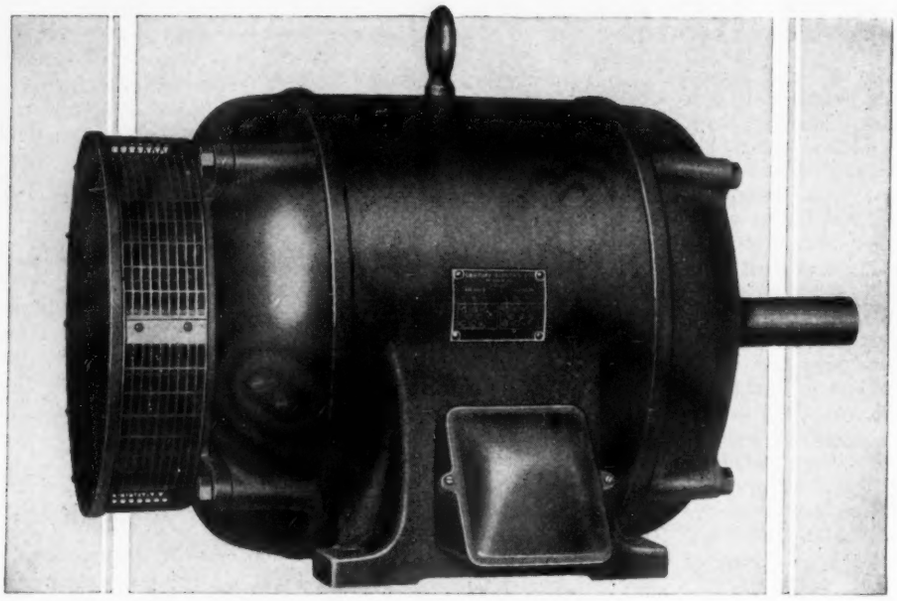
Cracking Equipment Prepares Hydrogen for Welding

Hydrogen suitable for use with atomic welding equipment can be produced by new equipment, for the dissociation of anhydrous ammonia into its component parts of 25 per cent nitrogen and 75 per cent hydrogen, which is manufactured by the General Electric Co., Schenectady, N. Y. The dissociator has a maximum capacity capable of supplying enough dissociated gas per hour at atmospheric pressure and temperature to operate a ⅛-inch electrode holder for current values up to and including 70 amperes. The ammonia gas is drawn directly from a standard tank of good quality anhydrous ammonia.

The dissociator consists of an electrically and thermally insulated alloy tube filled with an ammonia cracking catalyst and connected to a low-voltage, high-current transformer. Suitable inlet and outlet tubes and opening for temperature indicating and controlling devices are provided. All parts subjected to high temperatures are made of heat-resisting alloys and are welded at all heat joints. Screwed points are placed in unheated parts of the dissociator.

In operation, a small snap switch is pressed and after about 10 minutes the temperature indicator will show a reading within the operating zone. The ammonia tank valve is then opened and the operator is ready to weld. As soon as the arc is struck the gas will flow and when the arc is broken the gas will stop. When everything is functioning properly, the dissociator will need no more attention even though the operator ceases welding for some time. It is not necessary for the operator to start using gas as soon as the operating temperature is reached in the dissociator.

THEY KEEP A-RUNNING



10 Horse Power Century Type SC Multi-speed Constant Torque Squirrel Cage Induction 3 and 2 Phase Motor

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MULTI-SPEED MOTORS

Constant Horse Power ⁄ Constant Torque ⁄ Variable Torque

These Multi-speed Motors have the added advantage of full protection to the stator, armature, and other internal parts of the motor, all of which are completely isolated from the outside air. They are particularly desirable in all installations where adjustable speed requirements must be met; and where dust or dirt are present in objectionable quantities—or where unusual dampness prevails such as in creameries, packing plants or outdoor installations.

They are built for 2, 3 and 4 speeds with wide or narrow speed ranges, such as 1800/1200 or 1800/600 down to 900/450 r.p.m. (60 cycle). Special speed combinations are available.

Built in standard sizes from ¼ to 125 horse power, in normal torque, high torgue and normal or low starting current types.

CENTURY ELECTRIC COMPANY

1806 PINE STREET ⁄ ⁄ ST. LOUIS, MO.

40 U. S. and Canadian Stock Points and More Than 75 Outside Thereof

SINGLE PHASE, THREE PHASE, AND DIRECT CURRENT MOTORS

Century MOTORS

MOTOR GENERATOR SETS, ROTARY CONVERTORS, FANS AND VENTILATORS

FOR MORE THAN 26 YEARS AT ST. LOUIS

605

Large Pressure Vessels Are Forged With Ease

MANUFACTURE of forged steel pressure vessels, production of spirally welded pipe and straightening of steel products were subjects occupying a portion of the time of the iron and steel division of the American Society of Mechanical Engineers, meeting in Chicago, Sept. 23-26. Approximately 75 attended the session.

In discussing the manufacture of large weldless forged steel pressure vessels, J. L. Cox, assistant to the president, Midvale Co., Philadelphia, described various types of thick-walled cylinders for chemical processes and other work demanding ability to withstand pressures of 2000 or 3000 pounds per square inch. He followed the manufacture through from pouring of the ingot to the final pressure testing of the finished cylinder. Each step was illustrated by a series of lantern slides showing pouring, piercing, forging and expanding, boring, necking, closing, machining flanges, etc. Most impressive was the apparent nonchalance with which workmen handle the immense pieces of steel and the magnitude of the operations. Ingots weighing 70 tons are common and special drop-center flat cars of heavy construction are required to ship finished vessels.

In discussing this paper, F. C. Langenberg, United States Pipe & Foundry Co., Burlington, N. J., and P. E. McKinney, Bethlehem Steel Co., Bethlehem, Pa., pointed out other methods for handling some of the operations.

Pipe Can Be Made Spirally

After covering in more or less detail the various methods of forming pipe by the longitudinal curling of skelp and then welding the edges electrically or by gas welding, Leon Cammen, consulting engineer, New York, described in detail a new process by which pipe can be made spirally. In this process, developed by Mr. Cammen, a comparatively simple machine is used to feed strip steel from a large coil, to clean up and bevel the edges, to curl the strip spirally, to electrically weld the spiral joint, to clean up the joint by grinding and to cut the pipe to the desired length. Provision also is made for signalling the approach of the end of the coil of strip.

The machine consists of a coil support, a pair of powerful feed rolls and a closed chute carrying milling heads at its sides—all of which mechanism is mounted on a bed adjustable about a center under the bending rolls to give the proper angle of spiral for various widths of strip and diameters of pipe. The rest of the machine consists of a simple set of bending rolls open at the end and co-ordinated with the feed rolls, an automatic welding head with rolls for closing the seam and holding it together during the welding, and a feedout table with automatic gas cutting-off attachment.

New Field Is Opened

Mr. Cammen pictured the machine, which still is in the experimental stage, as opening a new field for pipe manufacturing in strip mills, whose strip business sometimes is poor when the demand for pipe is good. Because of the comparatively low cost of the units, the small amount of floor space needed and the minimum of operative attention required, two men to each three or four units, Mr. Cammen claimed that entering the welded pipe business is now easy and economical. The paper inspired many questions and also aroused some rather active discussion as to the relative merits of the longitudinal and spiral welds, and as to the strength and character of the welds themselves.

In presenting a paper on the straightening of steel products, J. Blair Sutton, president, Sutton Engineering Co., Pittsburgh, pointed out that not until the use of presses and automatic machines became common did straightening of stock become of importance. He traced the development of straightening practice from the straightening block and hammer method of the blacksmith to modern cross-roll machines with bar straightening speeds of 450 to 500 feet per minute, and with pipe capacities up to 26 inches diameter.

After going into the subject of sheet levelers which break sheets both ways and which are important since thin finishes of the pyroxilin variety have become common, Mr. Sutton went into the mechanical details of straightening by rolls. He stressed particularly the importance of adjustable centers to give roll straighteners maximum range. He also made some predictions as to what the future is likely to bring forth in straightening practice, including increased capacities and operating speeds.

Progress Is Keynote of Gray Iron Institute Meeting

"Progress" is to be the keynote of the third annual meeting of the Gray Iron institute to be held at Hotel Cleveland, Cleveland, Oct. 8. The program which is composed principally of the economic and management aspects of the industry, is as follows:

Wednesday, Oct. 8

MORNING

Business meeting and reports of committees.

NOON

Group luncheon.

"The Consumer and Producer Profit Through the Trade Association," by Philip P. Gott, assistant manager, trade association department, Chamber of Commerce of the United States, Washington.

AFTERNOON

"How Research Is Benefiting Industry," by Dr. Zay Jeffries, consulting metallurgist, General Electric Co., National Tube Co., Aluminum Co. of American, Cleveland.

"Industrial Merchandising," by John S. King, King & Wiley Co. Inc., Cleveland.

"Reasons Why the Standard Cost System Should be Used," by A. C. Denison, president, Fulton Foundry & Machine Co., Cleveland.

Report of nominating committee, by Ray Redmond, chairman.

Election of directors.

Open Forum: For the discussion of any subject which any gray iron foundryman desires to present.

EVENING

Annual dinner.

"Some Problems of Our Economic Future," by Hon. James T. Begg, Cleveland.

"Convention Highlights," by D. M. Avey, editor, *The Foundry*, Cleveland.

Radiographs of Four-Inch Plate Are Produced

Successful radiographs taken through a piece of steel plate four inches thick have been prepared at the University of Michigan, Ann Arbor Mich., in a special lead-sheathed room. The tube which furnishes the ray for the radiograph is of German manufacture and takes 230,000 volts for the investigation of steel four inches thick. Radiographs of lighter metals can naturally be taken successfully through greater thicknesses of metal.

The development of X-ray investigation to this point is a material aid in the investigation of large castings and welds. Through its use it will be possible to make master castings, which will be free from flaws, and which will serve as models for subsequent castings.

The lead-sheathed room is necessary to the process as it is not only quite impossible for the investigator to remain in the room with the apparatus after the current has been turned on, but it is necessary to screen the room off from other parts of the building. The switch is operated by the closing of the door while the investigator watches the apparatus through a small window composed of four thickness of special lead-glass.

Effects Economies in Small Stampings Production

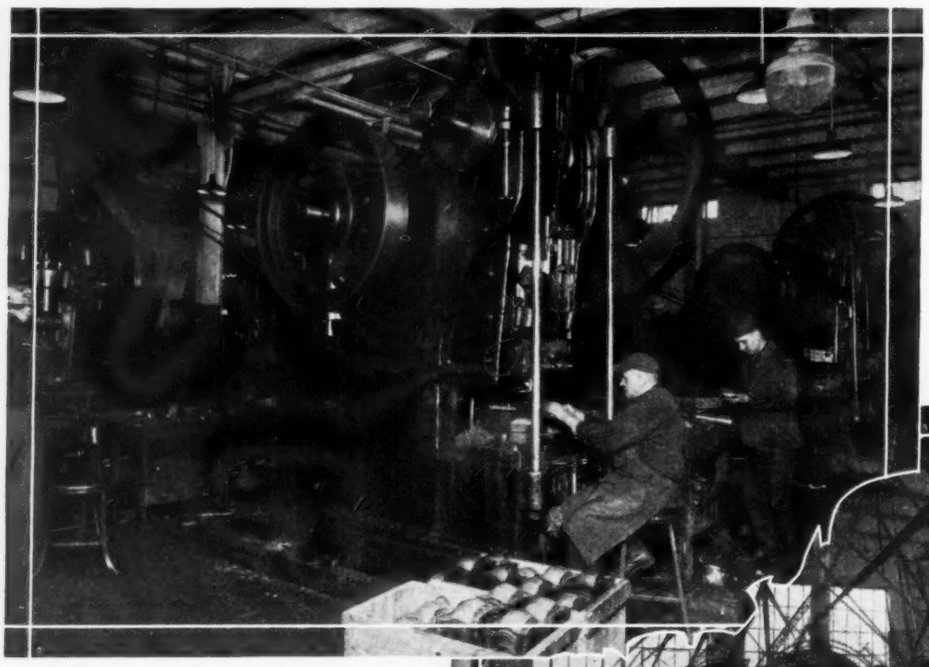
BY A. H. ALLEN
Editorial Representative, STEEL

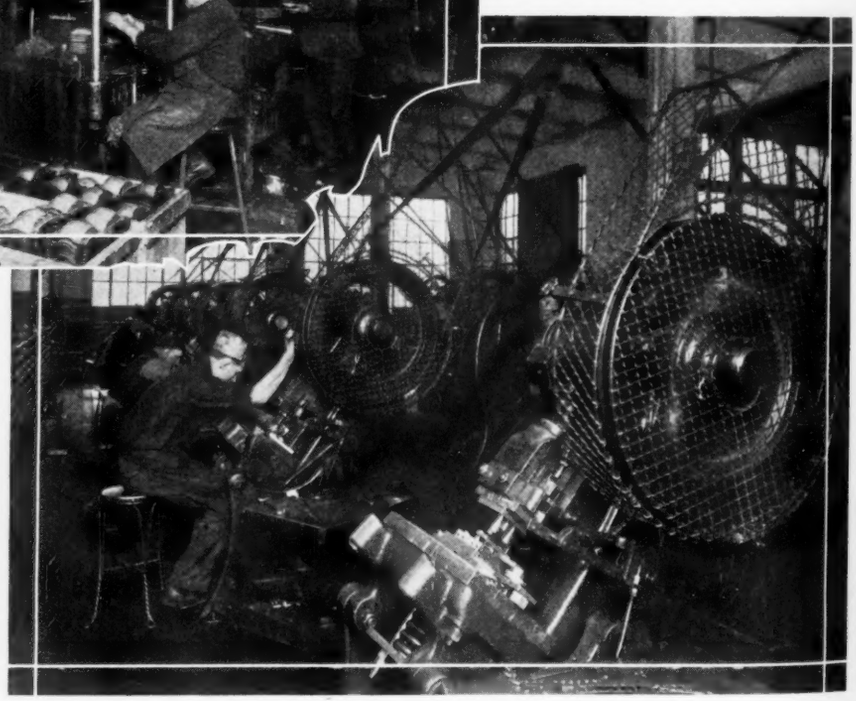
MEDIUM and small size stampings and punchings form a great bulk of the smaller parts entering into the assembly of the modern automobile, refrigeration machinery, radio and a great variety of other lines, and the growth of the small stampings industry has paralleled the rapid strides which modern mass production methods have permitted the above mentioned articles to enjoy. We live in the age of the specialist and specialized manufacturing processes which have given birth to companies restricting entire production to one particular class of products, such as small and medium size stampings, in the effort to produce these parts, regardless of quantity, at a minimum cost.

Representative of such enterprises is the Detroit Stamping Co., 3445 West Fort street, Detroit, an organization equipped to manufacture stampings of the smaller variety and to produce either large or small quantities most economically. The company's achievement in this direction is attributed to die designing and diemaking practice. Experienced die men are employed who have at their disposal special equipment of modern type, designed specifically to handle the production of dies limited in size.

Dies used in the production of the lighter stampings, including such parts as small washers, small drawn shells, flanges, shims, etc., where the wear on the dies is not excessive, are formed from ordinary tool steel. Where superior wearing qualities are demanded from the dies, various types of alloy steels are used, some cast and others in the form of stock bars and strip. A number of types of alloy steels have been tried in the fabrication of these tougher dies and at present a chrome-vanadium steel is being utilized. Turning, drilling, filing, shaping, milling and sawing operations are performed on a battery of machine tools operated in the die-making department. It is in the manipulation of these specially developed machining processes that the saving in die costs is effected.

An interesting improvement has been made in the grinding of dies. Instead of the old method of using a vertical wheel taking a 1/16-inch cut, the company uses the flat surface of a rotary grinding wheel against the surface of the die which is held in place with a magnetic chuck. The wheel takes a cut 4 inches wide on every travel of the carriage and the machine can be set for any depth and tolerance of cut and will run automatically until the cut is completed, after which it stops automatically. Another time saving machine is used for sawing off large pieces of steel, this class of work being accomplished in one fourth the time required by cross-cut machines. The machine consists





MEDIUM-SIZE stampings are formed on straight-back upright gear presses as shown at the left. Below is a battery of open-back inclinable presses equipped with progressive dies which permit the rapid production of smaller types of stampings

SHEET MILL MACHINERY FROM AVONMORE, PA. TO KOBE, JAPAN

The World's our Field!

COMPLETE ROLLING MILL EQUIPMENT

HEAVY AIR FURNACE CASTINGS

BAIRD WATER COOLED STANDINGS

CHILLED AND SAND ROLLS

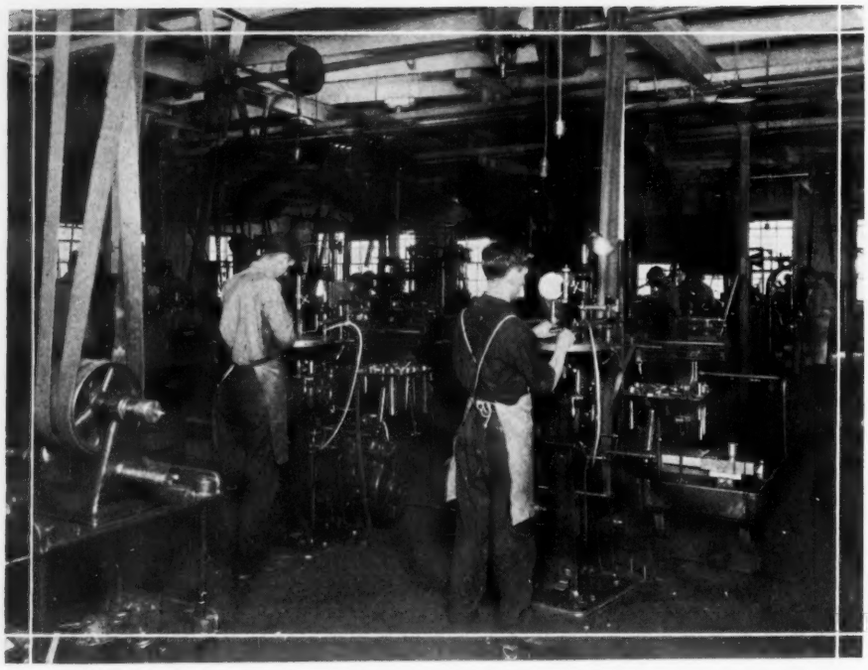
STEEL AND ALLOY ROLLS

ACID OPEN HEARTH STEEL CASTINGS

The high quality of materials and fine workmanship of National Roll and Foundry Co. products are familiar to foreign buyers as well as to American Industry. Good news certainly does travel.

The National Roll & Foundry Co.

Avonmore, Pa., U. S. A.



Specially designed diesinking machines are used effectively reducing die costs

or a metal bandsaw supported between two large pulleys and equipped with a roller table, jigs and an automatic feed. The saw produces a clean cut without waste and eliminates much of the machining necessary when a cross-cut saw is used.

After machining operations have been performed the dies are hardened and ground. Hand-operated presses are used for experimental purposes when each die is nearing completion and after it has been completed, to insure the final stamping made from the die conforming to specifications. All dies are kept in stock also, and it is estimated that the company has over 2500 dies in storage on metal racks in a special room set aside for this purpose.

Two Types of Presses

Stamping equipment at the plant includes two batteries of presses, one a group of straight-back upright gear presses ranging in capacity up to the Bliss-Consolidated 76½ type; the other is a battery of small open-back inclinable presses for the production of washers, and forming and blanking operations on light-gage metal. Some of these presses are equipped with automatic roll feeds to save the cost of a full-time operator and greatly speed up production. Power shears are operated also in the press department for cutting material to length and width for the presses.

A brief account of how cups or shells are drawn from flat stock might prove of interest. The die used is constructed, whenever possible and economical, to finish the stamping in as few handling operations as possible. Therefore, the die in the case of a shell is made with progressive forming operations. The first time the press completes a stroke the die draws the flat stock approximately one half the required depth, depending upon the article. The strip of metal then is pushed forward and the die on the second stroke of the press draws the sheet to the required depth while the first die is performing the first operation on a succeeding part. On the third stroke of the press the piece is drawn to shape and size, although still attached to the flat stock. On the fourth stroke the piece is blanked if there is to be a flange or edge to the shell; if not, then the die trims the shell and it drops out of the press into a container. If holes are required either in the base of the shell or on the flange this is done on the third operation.

As the finished shell falls out of the press, another, having progressed through the operations, is ready to be blanked. Thus at each stroke of the press a shell is completed. This progressive method of operation is characteristic of most small stampings where either piercing or forming is required.

Seamless Sleeves Made

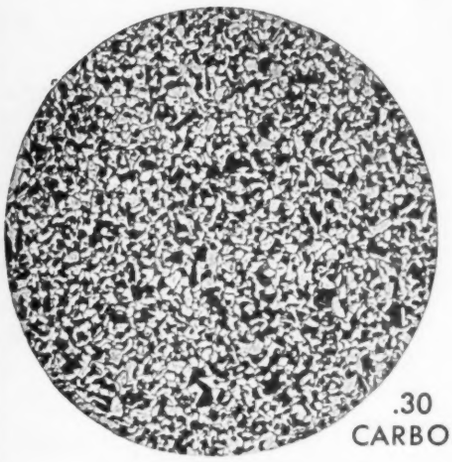
Making seamless sleeves from sheet metal is an unusual procedure carried on by this progressive method. These sleeves can be made as long as 3 inches and range in diameter up to 7 inches, while the stock used varies in thickness according to the job. The work is performed cold and in three operations, a progressive die with three impressions being employed.

In addition to the previously mentioned products which the company is engaged in manufacturing are such parts as brackets, cam and lever arms, trays, bearing caps, clamps, clips, wrenches, short sleeves, bearing races, flat bronze bearings with oil grooves, lock washers, gaskets, ratchets, collars, braces, cups, expanders, box corners, channels, angles, and many other miscellaneous pieces.

Frequently the material in some products has a tendency to split due

Over 2500 dies of various sizes are stored in steel racks such as shown

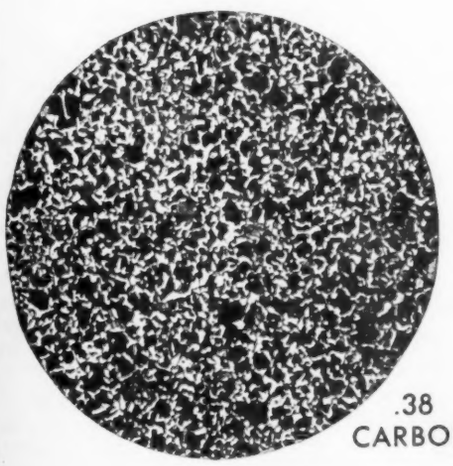
Densite



.30 CARBON

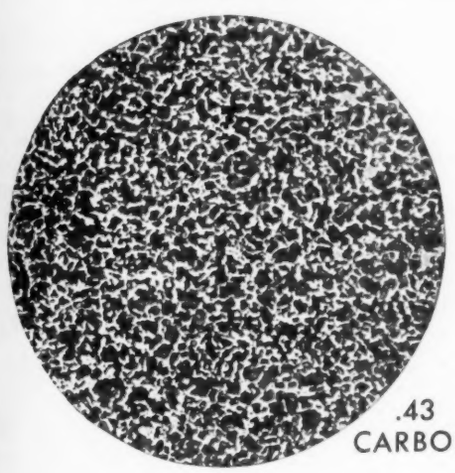
WHEN DENSITE IS USED -- THERE ARE NO BANDED STRUCTURES.

Write for Bulletin No. A-5. It is a chart showing STRUCTURES, INCLUSIONS and PHYSICAL PROPERTIES of DENSITE REFINED STEELS of various carbon contents



.38 CARBON

DENSITE REFINED STEELS withstand drastic quenching. They are obtainable from your REGULAR source of supply. Write DENSITE REFINED into your specifications.



.43 CARBON

DENSITE CORPORATION OF AMERICA
CLARK BUILDING · PITTSBURGH, PA.

Storage and shipping department; tumbling barrels are shown at the extreme left in the illustration

to extreme drawing and therefore must be annealed in a furnace to render it more ductile. For this purpose a furnace of the periodic type and using gas as a fuel is employed. Also it is occasionally necessary to heat heavy material that has to be swaged into shaped before introducing it in the press, and the same furnace is used for this purpose.

An interesting example of the use of the furnace is in connection with the fabrication of bronze bushings for a truck axle assembly, made from strip stock ½-inch thick. They are run through a two-stroke heavy-duty press with a progressive blanking die which punches the center holes and blanks to size. They are then heated in the furnace and when hot the blanks are carried from the furnace to the next press in a basket suspended from a pulley running on a gravity wire cable. Here they receive an oil groove and a special forming and are trimmed cold and finished in another press.

Tumbled in Sawdust

When the stampings have received the various forming treatments, they are put in tumbling barrels and tumbled in sawdust to remove burrs and clean the parts from drawing compound, oil and grease. They are then sent to the shipping department where they are inspected, counted and packaged for shipment.

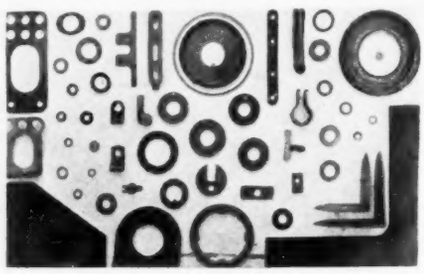
The stockroom at the plant contains a complete line of materials including sheet steel of every specification, size and gage. Large stocks of brass, copper, bronze, tin, lead, aluminum and zinc in many forms and specifications are kept here as well as sheets of fiber, celluloid, German silver, etc. In fact the variety and completeness of this stock is a graphic presentation of the diversity of production of metal stampings carried on in a plant of this type.

Mirrors of Motordom

(*Concluded from Page* 33)

Detroit entered last winter with a fair financial cushion, which has been largely dissipated. There probably will be real human distress in Detroit this winter.

Most automotive executives hope the worst is over, but underneath is a current of apprehension. The eastern executives of one large group in the industry are talking moderately cheerful, but the plant executives in moments of frankness expect conditions to grow steadily worse until February. A great deal of money has been made in Detroit in the past two weeks on the "short" side of automotive stocks.



A number of the small and medium-size stampings which the company has produced

There is a great deal of harsh feeling in Detroit on two subjects. One is the tariff, which undoubtedly is stimulating the construction of branch plants abroad. In lesser degree, the traffic in steel over the Detroit river has been hindered. The other is an increasing conviction that if New York bankers in the summer of 1929 had not thwarted the federal reserve bank and let speculation go to its extreme peak, the reaction would have been milder and perhaps nearly over by this time.

Black is again becoming the most popular automobile finish . . . Mathis (pronounced Mat-teece) the French midget Durant plans to build, will offer a sedan as well as a coupe and delivery body . . . A supercharger for Model A Fords will be offered by Ralph DePalma after experiments at the former Wills St. Claire plant at Marysville, Mich. . . Ford's expenditures for expansion this year exceed $30,000,000 . . . It was an error to say recently that Reo was making the "silent second" type of transmission for Pierce Arrow; the fact is, Pierce Arrow uses the herringbone type transmission under license from Reo but it is not made by Reo . . . Auburn has covered its valve requirements for eight months with Thompson Products . . . Fargo, the Chrysler truck subsidiary, is bringing out a new line of trucks and buses powered by a straight eight motor . . . Hudson has awarded a contract for steering wheels to the Sheller Mfg. Co., Portland, Ind.

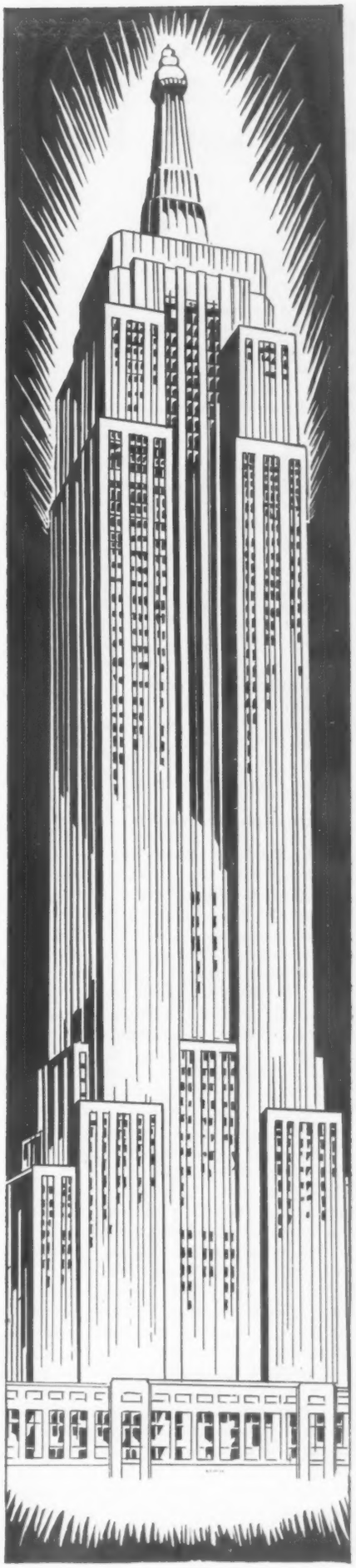
Steel Research Proceeds Along Varied Lines

Technical research work conducted by members of the steel industry is progressing favorably along varied lines, according to the announcement of the American Institute of Steel Construction in the *News Digest*. Arrangements for load tests on the battledeck floor have been made with the bureau of standards, Washington, and with the co-operation of the American Bridge Co. Sound conductivity tests by the bureau of standards soon will be made by Dr. Paul Heyl.

The Empire State and other important buildings are used as a laboratory for a series of comprehensive tests on stress-strain of wind loads in the steel frame. The Empire State is an ideal structure on which to carry out these tests because of its record breaking height and advanced design. This building will be the tallest habitable structure in the world, it is symmetrical about its vertical axis, and for several years to come, at least, will be in a relatively exposed location in New York City. The series of wind stress tests now being carried out on the American Insurance Union building at Columbus, O., are developing interesting and valuable data.

In none of the previous wind stress tests has the stress-strain in the main girders been determined, although that stress-strain is more important in girders than in columns. It is therefore planned to have readings on girders made on the Empire State building.

Old Methods—



ENDURO NIROSTA, processed according to patented Krupp specifications, has created new thoughts and new specifications for a stainless non-corrodible steel.

ENDURO equipment is fast replacing equipment fabricated from less permanent metals. New applications for ENDURO are being found daily. Building fixtures, marine equipment, canning and preserving kettles, restaurant fixtures and utensils, hospital equipment,—for these and countless other uses this steel, which is proof against rusting, contamination and tarnishing, is specified and furnished.

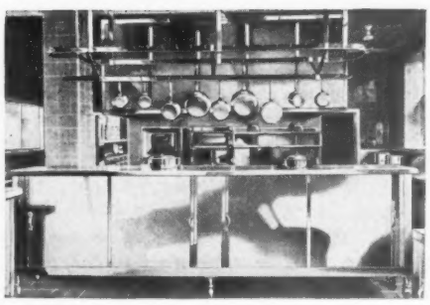
ENDURO has stimulated old markets and created new markets for manufacturers and fabricators of equipment used wherever corrosion or contamination is a factor.

ENDURO may likewise extend your markets or increase the salability of your product. Republic metallurgists will be glad to work with you toward that end.

Central Alloy Steel Division

REPUBLIC STEEL CORPORATION

HEADQUARTERS: YOUNGSTOWN, OHIO



Study Corrosion Problems of Auto Industry

CORROSION of metals used in the automotive industry, its causes and possible means of prevention occupied a major share of attention at the fall meeting of the American Electrochemical society in Detroit, Sept. 25-26. As utilized in automobile manufacture, metals are subjected principally to atmospheric corrosion and the most common and practical protection is obtained by dipped, sprayed or plated coatings.

Zinc coatings resist corrosion better than cadmium, according to C. L. Hippensteel and C. W. Borgmann, Bell Telephone Laboratories, New York, who recently carried out a series of experiments to determine the efficiency of electrodeposited coatings of these two metals against outdoor atmospheric corrosion. Discussing this conclusion, Dr. M. R. Thompson, bureau of standards, Washington, suggested that better coatings might have been obtained by changing the plating procedure, although he could not venture an opinion as to whether the corrosion results would be altered.

Atmospheric Conditions Vary

Dr. William Blum, also of the bureau, stated that atmospheric conditions vary widely over short distances and that the results in a particular atmosphere might not apply in an atmosphere 15 miles distant. He reported, however, that army and navy investigation showed that cadmium plating has a good resistance to sea water corrosion. O. W. Storey, C. F. Burgess Laboratories Inc., Madison, Wis., mentioned a peculiar case of corrosion in the Gulf district. Two wires constituting barbed wire fencing were found to have heavy and light coatings of zinc, respectively, and where the two wires touched, the heavy coating prevented corrosion of the thinner. No explanation could be offered.

A method which would evaluate accurately the results of corrosion tests was described by Karl Pitschner, Firestone Steel Products Co., Akron, O., the method consisting of dissolving the metallic iron in water and iodine. Describing corrosion of aluminum sheets in an electric oven, Mr. Storey said he believed the cause to be free sodium hydroxide in the sodium silicate used as an adhesive in fastening asbestos insulation to the aluminum. Other speakers mentioned the possibility that corrosion was caused by partial decomposition of the sodium silicate. C. Van Brun, General Electric Co., Schenectady, N. Y., however, stated that insulating material containing sodium silicate breaks down under heat into silica crystals and sodium carbonate. Mr. Storey, on the other hand, contended that corrosion was caused by free caustic and not by sodium carbonate.

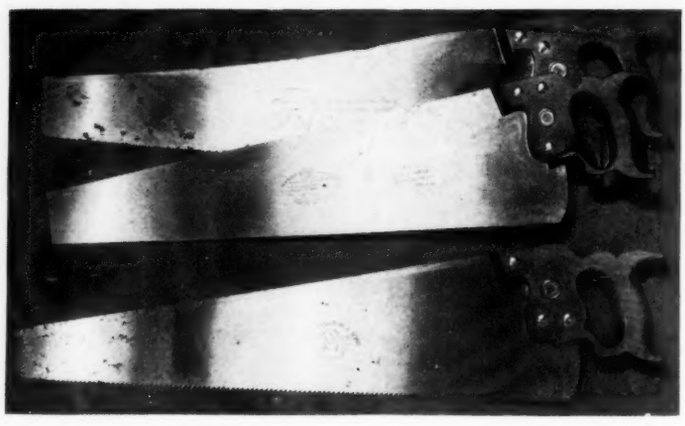
Investigations on plating of radiator shells with data on methods used, were described by O. P. Watts, University of Wisconsin, Madison, Wis. W. W. McCord, McCord Radiator & Mfg. Co., Detroit, said that although Mr. Watts' results seem to indicate that sulphate copper plating did not give as heavy a coating as cyanide plating, he believed that the reverse was true under the same current consumption. While some of the radiator shells examined by Mr. Watts showed extremely thin undercoatings of copper, it was suggested that visual inspection after the buffing operation would reveal that difficulty.

W. W. Phillips, General Motors Corp., Detroit, said that considerable improvement has been made in plating to obtain uniform coatings and that increase of electrode distance to 10 or 12 inches in copper plating may give better results. He also mentioned that improvement in polishing has been brought about through the use of abrasive wheels of uniform grain size.

Better Plate Is Possible

R. J. Wirshing, General Motors Corp., Detroit, described a method for obtaining a more corrosion-resisting chromium plate by heating the deposit for 30 minutes at 450 degrees Fahr. However, difficulty was found in applying the method to composite platings which usually are employed in automotive work. Hydrogen driven off the undercoatings ruptures the top coatings and allows the corrosive agent to penetrate to the base metal. The method of testing corrosion resistance of the chromium coatings obtained by Mr. Wirshing was described by H. C. Mougey, also of General Motors Corp. The test which uses calcium chloride solutions was suggested because of increasing use of that material on highways. According to data presented by Mr. Mougey, calcium chloride attacks chromium coatings much more rapidly than the sodium chloride solutions which usually are employed in short time testing of corrosion resistance.

Saws Fly Over South Pole with Byrd



THREE handsaws used by the Byrd Antarctic Expedition have been returned to the makers, Henry Disston & Sons Inc., to be added to that company's collection of notable tools. Of these saws, two actually were carried aboard the airplane *Floyd Bennett* when it flew over the South Pole. The third one, a metal cutting saw, was a favorite tool of Victor H. Czegka, the chief welder of the expedition.

All three saws were in constant use in Little America, under low temperature conditions seldom, if ever, before encountered by handsaws. The only signs of their unusual experiences are a few rust spots on the originally highly polished blades.

The Byrd Expedition was completely equipped with Disston saws, saw tools, and files. This equipment included 14 handsaws, a 24-inch hand hacksaw, a nest of saws, a hand saw jointer and a saw set, also watchmakers' files, needle files, diesinkers' rifflers, warding files, pillar files and a large number of saw files for use in keeping the equipment in shape.

Studies Physical Qualities of Manganese and Alloy Steels

UNDER conditions of service, which give a cold working effect to the metal, manganese steel develops an increasing surface hardness which not uncommonly reaches a value of 550 brinell. In order to investigate this phenomenon the American Manganese Steel Co., Chicago, recently made exhaustive tests comparing thousands of alloy steels under varying laboratory and service conditions. Some of the results of these tests are shown in the accompanying illustrations. The alloys compared with manganese steel vary, but in each case the selection is typical of the best of the group tested.

The investigators found that manganese steel is unique in its property of hardening under cold working in service. They, therefore, assumed that any hardness comparison between cast-manganese steel and other cast-alloy steels to be fair to manganese steel must be made on the basis of the actual hardness of the working face under actual service conditions.

Brinell Hardness a Factor

In one series of tests, specimens of cast-manganese steel with a hardness of 550 brinell produced by cold working were compared with typical cast-alloy steels of equal brinell hardness. This hardness can be imparted to only a few of the commercial alloy steels (excluding high-carbon tool steel) and represents essentially a quench-hard condition or a condition produced by quenching followed by slight tempering. Such a hardness for instance can be obtained in a nickel-chromium steel of the S.A.E.-3145 type by oil quenching from 1500 degrees Fahr. followed by a draw from 250 degrees to 300 degrees Fahr. However, such steels in cast form have an elongation of less than 2 per cent.

The comparison is shown graphically in Fig. 3. The figures used for the alloy-cast steel specimens were the maximum values for any of the commercial alloys tested. The curves are typical stress-strain diagrams, the shaded portion representing the actual work performed in rupturing the specimens. The average of tests of manganese steel gave a tensile strength of 120,000 pounds per square inch, against a tensile strength of 200,000 pounds for the alloy steels used in comparison. However, the manganese steel showed a 45 per cent elongation against a 2° per cent elongation for the comparison specimens. Yet the strength of 200,000 pounds combined even with a 2 per cent elongation, the investigators found difficult to secure in any cast alloys. On a basis of work factor the diagrams favor manganese steel.

Work Factor Important

In the report of the investigating engineers considerable space is devoted to this work factor and its importance in comparing materials for service conditions. The report says in part that the two most important factors that determine the life of a casting are wear and breakage. The first factor, wear, is a function of the surface of the steel and nothing is gained and a great deal often lost by having exceptional hardness in the body metal of the casting. A typical manganese steel casting is tough throughout with a relatively low hardness. However, in service the hardness rapidly increases on the surface of the working area and this hardness continuously is self-renewing and supported by a tough backing. The report states that the second factor, breakage, involves the body metal which supports the wearing surface and has to do with strength and toughness.

The term strength is somewhat ambiguous when applied to material under investigation, according to engineers of the American Manganese Steel Co. who are of the opinion that comparisons should be made on the basis of elastic strength and ultimate strength. They found that in the case of manganese steel the elastic strength upon deformation rapidly approached the ultimate strength, showing that a stiffening effect takes place in the body of the metal under stress. In Fig. 2 the comparison is between specimens having identical tensile strength. This meant that the specimens to be compared with manganese steel could be fully heat treated to give a relatively high per cent elongation and still retain a tensile strength of 125,000 pounds, which as stated is the maximum average value for the cast-manganese steel used in the investigations.

Abrasion Resistance Considered

Another basis of comparison between manganese steel castings and other alloy steel castings might be that of identical resistance to abrasion. The ability to resist abrasion is not necessarily identical with hardness as indicated by a brinell test, and for this reason separate comparison tests were made as shown in Fig. 1. The fahrenwald abrasion factor was used and it was found, as shown in the diagram, that the comparison alloy steels must have a surface hardness around 650 brinell in order to yield an abrasive resistant factor equal to that of the manganese steel specimens. This high value of hardness is accompanied by high tensile strength and low percentage of elongation.

The investigators point out, however, that mere abrasion resistance value whether in manganese steel or any other alloy cast steel, is a poor

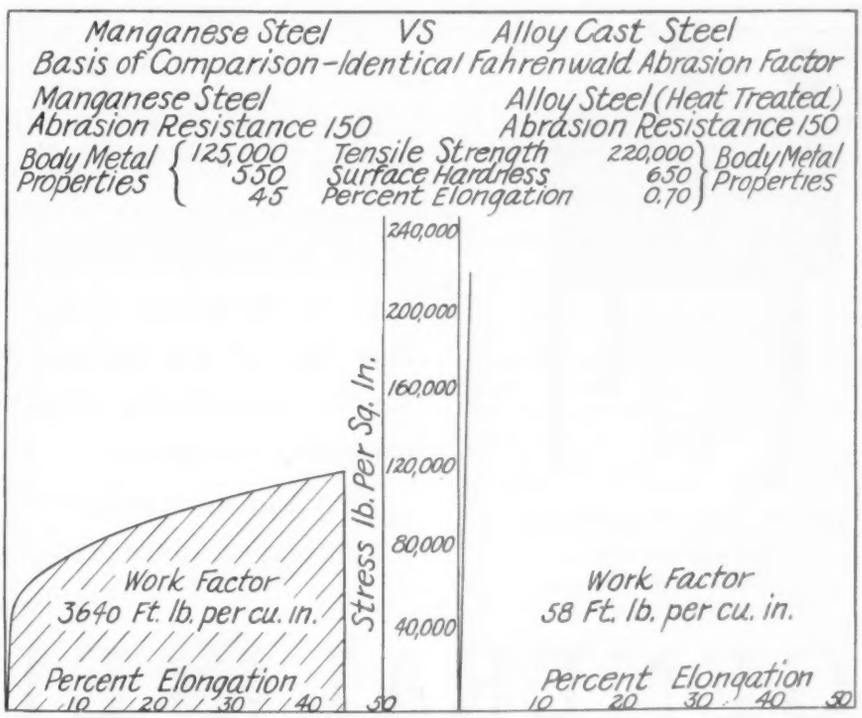
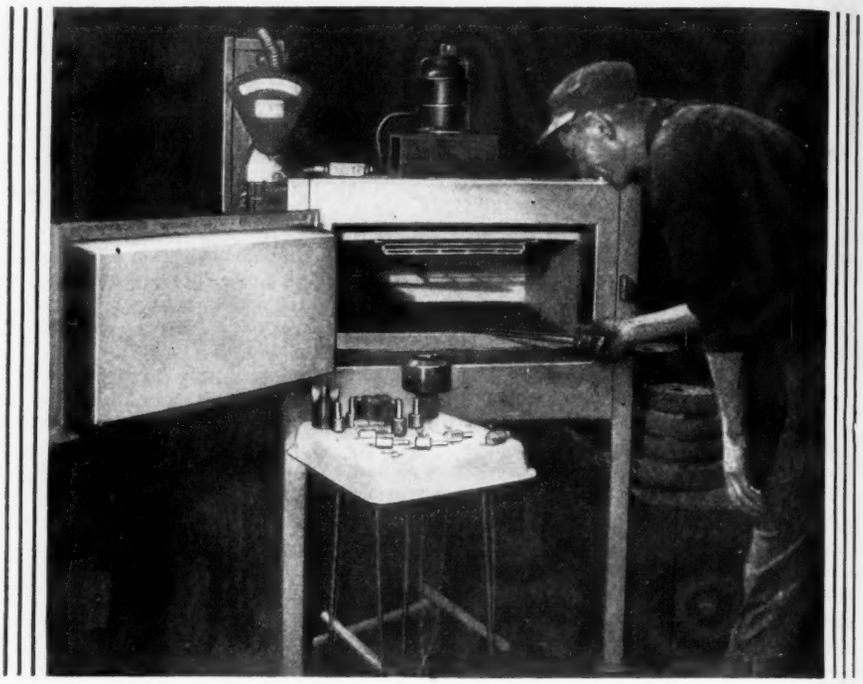
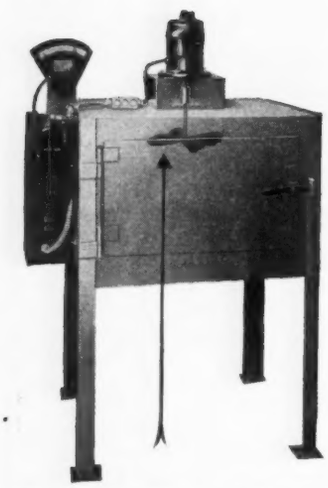


Fig. 1—Comparison of cast-manganese steel with cast-alloy steel specimens having identical fahrenwald abrasion factor

THE G-E AIR DRAWING-OVEN



"We've never found anything to equal it"



This fan improves quality and doubles production

"—and we've used salt baths, oil baths, and other types of tempering outfits", continued the heat treater at the High Speed Hammer Co., Rochester, N. Y.

We agree! There's nothing like it, in its price range, on the market. The motor-driven fan practically doubles production and maintains almost identical temperatures at every point in the oven. And the oven is heated and regulated by the famous G-E Helicoil sheath-wire units and the very best of G-E control. Nothing to give trouble. Just a simple, scientifically accurate, fast, clean, and inexpensive tempering equipment.

Ask your nearest G-E office about this air drawing-oven. It's the biggest advance to date in steel-tempering equipment.

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GENERAL ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

basis on which to buy castings when they are intended to withstand shock or breaking stresses. For abrasion alone there are certain high-carbon alloys giving a higher fahrenwald abrasion factor than either manganese steel or the special alloy steel under investigation. The only hardness of any importance in products intended for crushing, excavating and general mining work, is that of the actual surface of the casting and the body metal immediately underlying this surface for a distance sufficient to prevent possible deformation. In the case of wearing parts of large steam shovels, investigation shows that manganese steel has a density and close cohesion which makes for a higher abrasion resistance than can be determined by brinell or similar hardness tests.

To sum up the different tests graphically described in the accompanying illustrations, manganese steel castings when compared with other alloy steel castings gave a lower tensile strength but higher abrasion factor, and a higher per cent elongation and work factor when the surface hardness of both materials was held identical. When the tensile strength was identical manganese steel showed a greater abrasion factor, a larger elongation and a higher surface hardness and work factor; when the abrasion factor was held identical manganese steel showed a much lower tensile strength, a slightly lower surface hardness and much larger elongation and work factor.

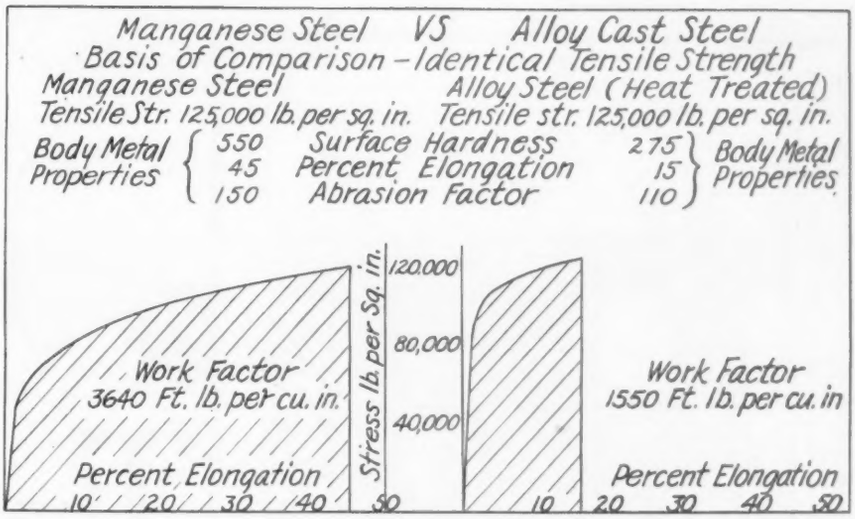


Fig. 2—Comparison of cast-manganese steel with cast-alloy steel specimens having identical tensile strength

Automotive Group Will Discuss High-Speed Tools

Tungsten-carbide in its roll as a cutting tool for high-speed cutting of metals will be discussed in relation to the economic value of its use at the ninth national production meeting of the Society of Automotive Engineers, meeting at Book-Cadillac hotel, Detroit, Oct. 7-8. W. H. McCoy, General Motors Corp., Detroit, will develop the subject in a paper entitled "The Future Development of Tungsten-Carbide as a Cutting Tool."

Attempt To Cut Weights

In a further attempt to cut weights of mechanisms, recent developments in aluminum alloys and their fabrication will be discussed by R. L. Templin, Aluminum Co. of America, New Kensington, Pa. The application of mathematics to determine the effect of time on production cost will be introduced by Paul N. Lehoczky, Ohio State university, Columbus, O. Given, for example, the problem of the manufacturer who expects to make and sell 40,000 of a given product per year, shall he tool up and make the whole 40,000 at one time or divide the job into four operations of 10,000 each?

Other papers to be presented are as follows:

"The Tool Engineer's Place in Mass Production," by O. B. Jones, Detroit School of Applied Science Inc., Detroit.

"Conveyors in the Automotive Industry," by J. H. Hough, Matthews Conveyor Co., Ellwood City, Pa.

"Wear Allowances and Tolerances on Gages," by E. J. Bryant, Greenfield Tap & Die Corp., Greenfield, Mass.

Production dinner, speakers are John Younger, Ohio State university, Columbus, O., and C. E. Wilson, vice president, General Motors Corp., Detroit.

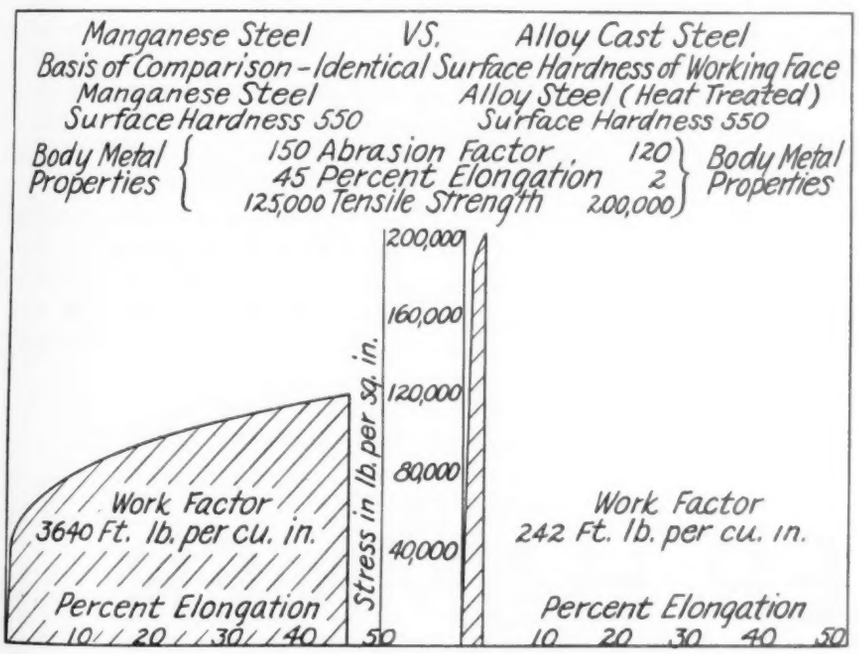
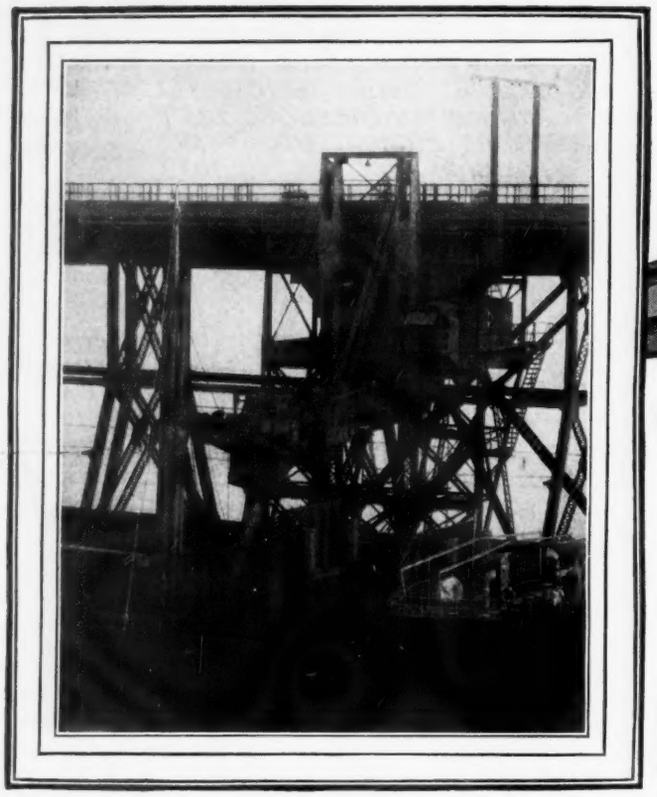


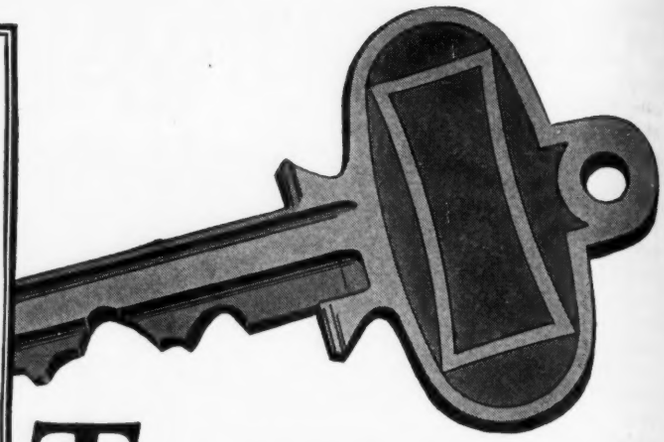
Fig. 3—Comparison of cast-manganese steel produced by cold working with cast-alloy steels of equal brinell hardness

Mechanical Engineers Elect Officers for 1931

The election of officers of the American Society of Mechanical Engineers for 1931 was announced recently by the tellers of election after the ballot of the membership was canvassed. The new officers are: President, Roy V. Wright, managing editor, *Railway Age*, New York; vice presidents, William A. Hanley, chief engineer, Eli Lilly Co., Indianapolis; Thomas R. Weymouth, president, Oklahoma Natural Gas Corp., Tulsa, Okla.; and Harvey N. Davis, president, Stevens Institute of Technology, Hoboken, N. J. Managers are W. L. Batt, president, SKF Industries Inc., New York; H. L. Doolittle, chief designing engineer, Southern California Edison Co., Los Angeles; and H. L. Whittemore, chief, engineering, mechanics section, bureau of standards, Washington.



C-H Controlled Coal-loading Tower at the Virginia Ry. Coal Pier, Sewall's Point, Va. Built by the Alliance Machine Company. This tower holds the world's record for loading.



The "KEY" to maximum hoist-earnings must be "made to order"

YOU seldom find one hoist-installation which duplicates another. In some way each new installation differs from others . . . in load, slope, speed, cycle or travel. The key which unlocks the earning power of any hoist-installation is its Motor Control. To secure the *maximum* earnings right from the start, the Hoist-Control must be designed to order . . . so that each of the variables is taken into exact account.

Since efficient Motor Control for Hoists is made only to order . . . your guarantee of trouble-free, profitable hoist performance is the service-record, the experience and skill of the engineers who design the Hoist-Control.

For more than 30 years Cutler-Hammer Engineers have designed and built hoist-control for every type of installation, varying from single-bucket non-automatics to the automatically controlled towers which hold the world's record for coal-ship loading. They have worked hand in hand with American Industry during that time, solving many of the most difficult control problems.

You can bring your hoist-control problems to C-H Engineers in full confidence of an efficient, trouble-saving and money-making solution. A letter will enlist their co-operation.

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The Control Equipment Good Electric Motors Deserve

(A-248)

Abnormality in Carburized Steel Due to Oxygen

EFFECTS of dissolved oxygen on the properties of steel, and methods of overcoming difficulties presented by dissolved oxygen formed the basis of the 1930 Campbell Memorial lecture, delivered Sept. 24 by Marcus A. Grossmann, director of research, Republic Steel Corp., Canton, O., before the Chicago convention of the American Society for Steel Treating.

A number of methods of analysis are available for determining the oxygen content of steels. Two of these make use of the reagent qualities of iodine and bromine; however, the most satisfactory and accurate method is the vacuum fusion method in which the steel is melted in vacuo and the oxygen combines with carbon to form CO gas, subsequently converted to CO_2 gas which is absorbed and weighed, the weight of oxygen in the steel being calculated from the amount of this gas. Oxygen contents ranging from 0.006 per cent upward are capable of measurement by this method.

Dissolved in Carburizing

Experiments have shown that oxygen is dissolved in steel in the carburizing process, some of the oxygen in the carbon monoxide carburizing gas being taken into the steel. It was further correlated by Dr. Grossmann that abnormality in carburized steels is directly due to the absorption of oxygen. To determine this a number of hardness testing blocks were cut from the rim and core portions of a billet of steel, each block being half rim and half core. The blocks were carburized and quenched, 24 hardness readings being taken; meanwhile analyses for oxygen of the rim and core of the billet were made. The hardness readings indicated that the core portion was soft and high in dissolved oxygen; the rim portion was hard, uniformly carburized and low in oxygen. Acid etching also revealed the soft spots in the core portions.

The mechanism of abnormality is in the cementite or iron carbide, the hard constituent, diffusing to the grain boundaries from the pearlite eutectoid material, leaving free ferrite, a soft material. The amount of free ferrite depends solely on the oxygen dissolved in carburizing. The carbide diffusion takes place after the transformation of austenite or below the critical point. Further tests revealed that steels low in manganese absorbed greater amounts of oxygen than those higher in manganese. Undoubtedly there are other factors influencing the rate and degree of oxygen absorption, but manganese is an important one.

Naturally the next step was to investigate for some means to prevent the occurrence of abnormality appearing upon carburizing. It was reasoned that if the carburizing gas were to be a hydrocarbon such as methane (CH_4) and all air excluded from the operation, then dissolved oxygen would be prevented and a normal carburized steel would result. Actual tests along this line substantiated this reasoning and analysis of a steel carburized with methane showed only a small increase in dissolved oxygen, probably due to slight impurities in the carburizing gas; and the steel was entirely normal in hardness and structure.

Corrosion-Resisting and Nitriding Steels Advance

(*Concluded from Page* 44)

as these a corrosion test capable of producing consistently accurate data is essential. In brief, the test which Mr. Huey outlined in his paper consisted in immersing carefully prepared samples of the metal to be tested for five 48-hour periods in nitric acid, 65 per cent HNO_3 by weight, contained in an all-glass apparatus and maintained constantly at the boiling point.

Grain Growth Measured

A series of experiments showing in a semiqualitative way the rate of grain growth in a heat-resisting steel containing 28 per cent chromium and 0.25 per cent carbon was contained in the first section of a paper by Arthur Phillips, associate professor of metallurgy, Yale university, New Haven, Conn., and R. W. Baker, Republic Steel Corp., Canton, O. Charts were shown to correlate factors of time and temperature with grain size. The authors concluded that in this steel the grains reach their maximum size after comparatively short periods at high temperatures.

The second part of this paper was confined to the study of the microstructure of steel analyzing 28 per cent chromium and from 0.07 to 0.26 per cent carbon. With reference to the structural changes and the effect of carbon on the alpha-gamma and gamma-delta points, previous research has placed the maximum carbon content for gamma-free alloys at about 0.20 per cent. Results discussed in this paper seemed to refute this contention and placed the limit at approximately 0.10 per cent.

Among the iron alloys in which high corrosion resistance has been obtained by adequate chromium addition, none, at the present time, is commanding greater attention than the nickel-chromium group in which the nickel addition is sufficient to render the material austenitic and nonmagnetic; a typical composition is the so-called 18-8 or 18 per cent chromium and 8 per cent nickel alloy. A discussion of the behavior of this alloy and its neighbors in composition, particularly from the standpoint of its relation to the system as a whole, was offered in a paper by Edgar C. Bain and Robert H. Aborn, members of staff, research laboratory, United States Steel Corp., Kearny, N. J.

Chromium Forms Surface Film

Chromium is the element which confers the property of inert surface film formation upon its iron alloys; moreover it may be added in large proportion and still yield a malleable alloy. Nickel is a logical addition to the iron-chromium material for it possesses, to some extent at least, two tendencies associated with potential corrosion resistance. In many aqueous environments nickel shows a more fundamentally noble behavior than iron, having lower solution pressure; in addition, it seems to possess the ability to develop surface passivity, at least in a measure, in the manner of chromium and of the chromium-iron solid solutions.

According to the authors the 18-8 alloy is corrodible if by a certain heat treatment the alloy carbide, mentioned in connection with the paper by Krivobok and Grossmann, is precipitated in the grain boundaries. This carbide absorbs chromium from the grains to become chromium rich, thus leaving the remainder of the alloy in a corrodible condition.

Discussion arising from these papers on corrosion-resisting steels brought up the question of standardizing on one type of alloy and whether it might be better to have a different alloy for each single purpose instead of attempting to make one type of alloy fit every need. The opinion was expressed that alloy users are on the verge of an era of innumerable corrosion-resisting alloys, each with its specific application and analysis.

Machine Tool Men To Meet

The Associated Machine Tool Dealers will hold their annual meeting Oct. 6-7 at Hotel Aspinwall, Lennox, Mass. Problems of the industry and the best methods of combating them will be discussed.

Economies Are To Be Gained by Mechanical Polishing

POLISHING of metals by mechanical means and repairing worn parts by electrodeposition of iron were two subjects proving widely interesting to the machine shop practice division of the American Society of Mechanical Engineers, meeting in Chicago, Sept. 23-26. Two papers on these topics were presented by acknowledged authorities in their respective fields and considerable healthy discussion was aroused particularly in regard to practical applications.

The paper on fundamentals of machine polishing was presented by Robert T. Kent, director of engineering, Divine Bros. Co., Utica, N. Y., manufacturers of metal finishing machinery. Because of the general misunderstanding of this subject, due to improper use of terms, Mr. Kent began by establishing some fundamental definitions. These definitions were clear and to the point. For instance, he said that polishing begins where true grinding leaves off, and might properly be termed flexible grinding, inasmuch as the wheel used has a certain amount of flexibility.

Cites Four Major Variables

When Mr. Kent took up the subject of the many subdivisions of the four major variables which must be considered when properly analyzing a polishing job, it was realized immediately that this was by no means the casual operation which its unscientific handling in many shops would indicate. While polishing can be done and is being done without much attention being paid to it, the quality of the work and the ultimate cost of the operations are not likely to stand close scrutiny under such conditions.

Among the phases taken up in detail by Mr. Kent were: Variable of the work, variable of polishing wheels, variables of the polishing machine, typical polishing machines, typical machine-polishing jobs, and the economics of machine polishing. By means of slides, Mr. Kent illustrated many different types of polishing machines, ranging from simple hand-operated types to ingenious automatic machines for the continuous straight line polishing of strip stock. Various types of work were also illustrated.

The other paper dealing with "Repair of Worn Parts by Electrodeposition of Iron," was read by T. P. Thomas, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. One of the jokes of long-standing in machine shops is to send a green hand to the tool crib for a "putting-on tool" when the victim has machined a piece undersize. This paper proved that at last there is such a thing as a "putting-on tool." It is in the form of an apparatus which electroplates iron upon worn or undersized steel parts. The process was described in detail, together with its application to worn or undersized thread and plug gages, arbors, reamers, motor shafts, gear centers, etc.

In discussing Mr. Kent's contribution, Floyd T. Taylor, engineer, Bullard Co., Bridgeport, Conn., emphasized the necessity for properly cleaning work before attempting to polish it. Herbert Chase, associate editor, *American Machinist*, and *Product Engineering*, pointed to the need for standardized wheels, grits, etc. B. H. Divine president, Divine Bros. Co., Utica, N. Y., gave some further points on buffing wheels, glue and grits. Guy Hubbard, associate editor, STEEL, Cleveland, pictured the primitive conditions still existing in many grinding departments and pointed to the parallel between what Mr. Kent and a few contemporaries are doing in this direction and what Frederick W. Taylor did for metal cutting.

Discussion of Mr. Thomas' paper was confined largely to questions. Mr. Taylor did point out, however, the apllication of nickel plating to similar purposes and A. H. Dill, Picatinny Arsenal, mentioned practical applications of his work.

Rolls Strip Steel in Packs of Twos at One Heat on Continuous Mill

MORE than 80 representatives of strip and sheet manufacturers attended a demonstration of strip pack rolling at the Riverdale plant of the Acme Steel Co., Chicago, Sept. 22. The new process was invented by Lloyd Jones, manager, Salem, O., division, F. W. Bliss Co., and was developed by the Acme Co. Essentially the process consists of passing a heated slab through a continuous train of roughing rolls and six stands of finishing rolls.

Dusted with Soda Ash

Mounted about 2 feet above the roller table on the exit side of and in close proximity to the last roughing stand is a rectangular box with a screen bottom containing soda ash. The moment the forward end of the strip is ejected from the last roughing pass the box is shaken mechanically, the soda ash being dusted on the top surfact of the metal as it continues its onward movement. As the strip progresses a few feet forward it is caught in the jaws of a doubling device, positioned in the path of travel, which swings upward through an arc of 180 degrees.

While the forward end of the strip thus is held rigidly the remainder of the strip continues to be paid out, finally being brought to rest in a doubled condition on the approach table leading to the finishing mill beyond. After the jaws of the doubling device are made to release their grip the doubled forward end of the pack is flattened somewhat by hand. The strip then progresses toward the first finishing stand, passing beneath three separately actuated rollers, each placed at diminishing heights above the roller table to force the fold of the strip together before it enters a horizontal edging pass.

Passes Through Six Stands

The pack composed of two thicknesses passes through the six stands of finishing rolls and is delivered to a grate-type cooling bed. Here the bottom end of the pack is wedged in an opening of the hot bed; the top end is attached to a hook suspended from an overhead traveling crane which moves toward the rear of the mill pulling the pack apart. When the pack is opened into a single strip, the forward end is fed into a motor-driven reel and wound into a coil.

During the demonstration the mill was scheduled on 23-gage strip based on single thickness, 10 inches wide and in a single length of about 300 feet. The maximum capacity of the mill rolling strip in singles is 20¼ inches wide and 0.095-inch thick or approximately 13 gage.

Scrap Rates Are Revised

Institute of Scrap Iron and Steel Inc., New York, reports new rates on scrap effective as follows: Sept. 15—Middleton, O., to Wheeling or Weirton, W. Va., $4; Wooster, O., to Canton, O., $1.39; Middletown, O., to Pittsburgh, $4; Sept. 16—Newburgh, N. Y., to Carteret, N. J., $3.70; Sept. 25—Columbus, O., to Zanesville, O., $1.89.

HIGH CARBON ROUND & FLAT

Wires

Piano Wire
Music Spring Wire
Phonograph Needle Wire
Vanadium Wire
Cast Steel Wire
Rope Wire
Round Spring Wire
Clock and Motor Springs
Clock and Motor Springsteel
Paragon Wire
Shade Roller Wire
Band Saw Wire
Flat Heddle Wire
Flat Tempered and Untempered Spring Wires
Cold Rolled Strip, 3" and narrower

Washburn Wire Co., Inc.
118th St. and Harlem River, New York, N.Y.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

USES:

Nitrided Case

Methods of judging the hardness and brittleness of surface and of estimating the depth of penetration discussed in Metal Progress, September 1930, *p.* 46, 2 *pp.*, 3 *illusts.*

A reagent has been developed which not only reveals the structure of the case but also etches the material so that a line of demarcation corresponds to a definite and appreciable change in hardness. The etching solution is made by dissolving in 100 milliliters of water the following reagents: 1.25 grams copper sulphate, 2.5 grams cupric chloride, 10 grams magnesium chloride, 2 milliliters concentrated hydrochloric acid, and diluting to 1000 milliliters with 95 per cent ethyl alcohol. Immerse the specimen 10 seconds in the reagent, polished surface down. Dropping the reagent on the surface results in confusing edge effects. The etched sample can be placed on the stage of a photographic microscope, with lenses and bellows extension set for 100 magnifications, and the depth of case measured directly with a rule.

—STEEL 10-4-30

Steel Forgings

A brief outline on the manufacture of steel for forgings presented by L. H. Fry, in the first of three articles, in Machine Design, September 1930, *p.* 38, 4 *pp.*, 8 *illusts.*

Some of the characteristics which arise during the process of manufacture and effect the final use of steel are discussed by the author. Two methods for checking segregation are described. A brief survey of steelmaking processes, including pouring practice, is included.

—STEEL 10-4-30

Tin Plate

Importance of the canning industry and its requirements of tin plate discussed in United States Steel Quarterly, Autumn number 1930, *p.* 81, 1½ *pp.*, 2 *illusts.*

The weight of tin is approximately 2 per cent of the total weight of the tin plate used for most canning purposes. A modern canmaking machine has a capacity of 300 cans or more a minute. It is estimated that 12 billion cans are required annually to pack the fruit and vegetable crop of this country. The author claims that despite efforts frequently made to discover other types of containers, so long as American manufacturers are afforded reasonable protection against foreign tin plate, the industry in America will continue to expand.

—STEEL 10-4-30

FABRICATION:

Seamless Tubes

Methods of manufacturing seamless tubes, Part II, discussed in Demag News (Duisburg, Germany), August 1930, *p.* 6, 6 *pp.*, 24 *illusts.*

Various diagrammatic sketches of equipment and layouts for making seamless tubes by the continuous and push-bench processes and of hot-drawing and reducing mills are included in the text. Details involved in the various steps of producing tubes by the previously mentioned processes are presented.

—STEEL 10-4-30

PRODUCTION:

Gamma Ray Radiography

Exploration of metals with radium, a new medium for diagnosing the interior structure of iron and steel, discussed in Metal Progress, September 1930, *p.* 96, 3 *pp.*, 7 *illusts.*

Limitations of x-ray analysis of steel may be removed by the use of the so-called gamma rays from radium which does not require the operator's presence during the exposure time nor high-voltage equipment. The part to be studied is properly mounted at a convenient distance and angle from the radon (for the radiation spreads out like a sphere, equal in intensity in every direction). A photographic film or plate, in a light-tight holder, is placed behind the object, and at right angles to the radius from the center. This setup is left undisturbed for a sufficient time, after which the plate is developed. It does not matter if the exposure is interrupted by taking the radon away temporarily for other uses.

—STEEL 10-4-30

Pig Casting Machine

American type pig machine installed at Thorncliffe Iron Works, England, described in Edgar Allen News, September 1930, *p.* 712, 2½ *pp.*, 4 *illusts.*

The advent of the mechanical pig casting machine was due chiefly to the large tonnages which now are being produced in the modern blast furnace. The double-strand unit recently completed at the English plant has a capacity between 1100 and 1500 tons a day and requires four men for its operation. Detail of the manganese steel moving conveyor parts, which accompanies the text, shows the small tolerances allowed.

—STEEL 10-4-30

MISCELLANEOUS:

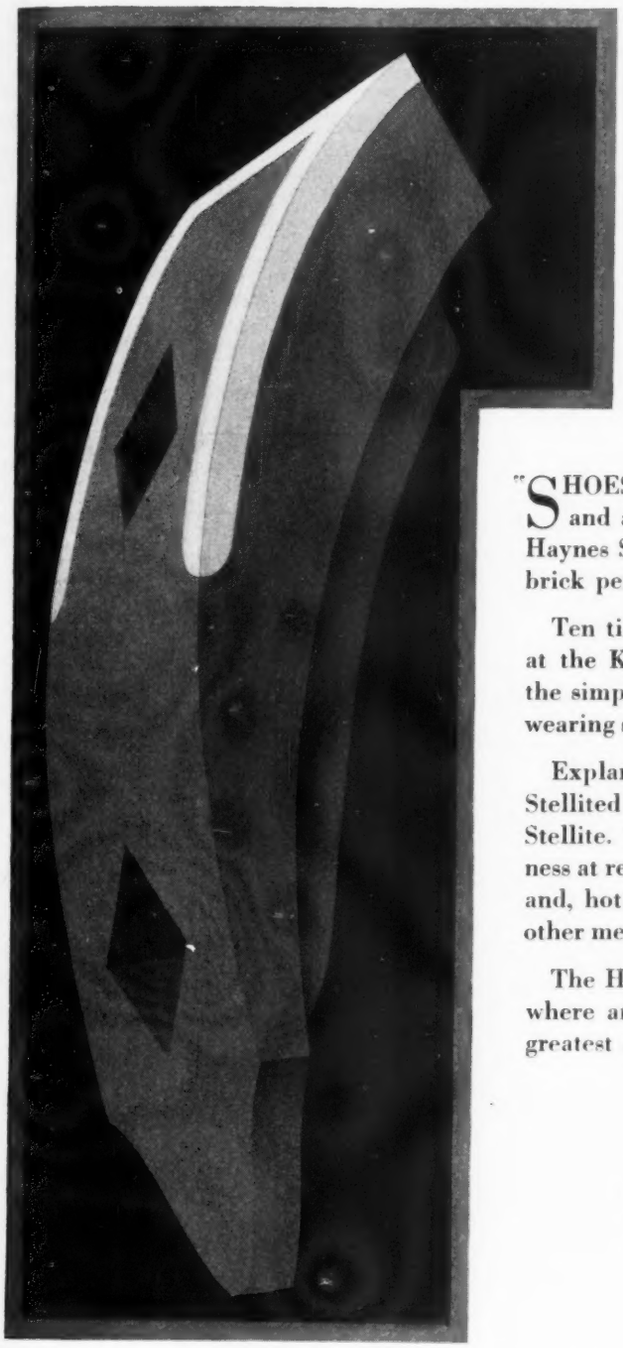
Clean Coal

Washed fuel in its relation to better combustion discussed by Erle G. Hill in Engineering and Finance, August 1930, *p.* 44, 1½ *pp.*

Cleaned coal is superior to low-grade coal and the difference in the market price of the two is a phase indication of the cost per unit of usefully applied heat. Accumulated ash on grate bars increases the draft required, clinker trouble and unevenness of the fuel bed. These in turn increase the excess air admitted, thereby diluting the products of combustion with nitrogen and uncombined oxygen and decreasing the calorific intensity. High draft also increases the leakage of air through the furnace setting which still further increases the volume of the products of combustion. Other important factors such as the effect of sulphur, sizing, moisture and the cost of cleaning coal are discussed.

—STEEL 10-4-30

8,000,000



BRICK WITH ONE SET OF HAYNES STELLITED FEEDER SHOES

"SHOES made of chilled cast iron had a life of 8 days and averaged 91,000 brick per day. Shoes coated with Haynes Stellite have a life of 80 days and average 100,000 brick per day."

Ten timês longer life, ten per cent more brick per day, at the Kenosha Brick Company, Kenosha Wisconsin, by the simple application of a layer of Haynes Stellite to the wearing surfaces of metal parts subjected to severe abrasion.

Explanation of this typical performance of Haynes Stellited parts is found in the unique properties of Haynes Stellite. This metal is inherently hard. It retains its hardness at red heat—is not affected by heat up to 1800 deg. F.—and, hot or cold, it resists abrasive wear better than any other metal.

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S—10-2-30

Machine Tools and Plant Equipment

"Without machine tools modern machinery could not be built."

—Joseph W. Roe

Instruments of Pure Science Aid Production and Inspection

THE eye and the hand of the mechanic have been outstripped in perceptive power by the machines and other plant equipment of modern industry. Not so many years ago the micrometer, reading to thousandths of an inch, was the only shop instrument of precision which did not depend in a large measure upon the keen eye and the sensitive touch of the skilled workman, and even that was challenged by the expert with steel rule and calipers. Not until 20 years ago did the micrometer become a real tool of production. Prior to that time it had been reserved in most cases for extraordinary uses such as checking jigs and in other fine tool work.

Experts Are Relatively Scarce

With the increasing of production the supply of skilled workmen has not kept pace with the demand, even though automatic and semiautomatic machinery has released skilled workmen from a vast amount of routine work. At the same time the limits of accuracy have been tightened so that limits expressed in tenths of thousandths are just as common as were thousandths of inches 20 years ago.

As in many other instances of late, applied science has stepped in to solve the problem, and just as production seemed to be outstripping inspection, the methods of the physicist were applied to the shop to give new methods of control and inspection which give production men new possibilities to aim at.

The recent National Metal exposition in Chicago, while not primarily a machine shop exposition, made this condition plainly evident. The new technique of shop instruments covers the field from the instruments which not only measure the heat treating process but actually control it automatically, down to the instruments which check exactly the hardness of the finished piece as well as its size. X-rays, photoelectric cells, radio tubes, galvanometers, microscopes, projection apparatus, photographic apparatus, and light wave instruments are a few of the things which enter into machine shop practice today—not only in shop laboratories but in the actual production departments.

No longer is the internal condition of a vital casting or forging a mystery and eventually a dangerous uncertainty. X-ray examination proves it to be sound or otherwise before it is touched by a tool. The grain structure of the metal is revealed by the projecting microscope and if desirable a permanent record is made by the substitution of a photographic plate for the ground glass screen. Heat treating is done by watching an instrument draw a graphical chart—by "watching a picture on the wall"—as one old time heat treater expressed it. The instrument goes so far in some cases as to control the heat, time the process and remove the work, by remote automatic control.

The human eye, with its speed of perception limited to about one-tenth of a second and with its color perception varying with the individual and with the day, and the nerves of the finger tips with their reputed ability to "feel" a thousandth of an inch, have served their purpose in bringing into being instruments which by means of ultra speed photography have a speed of perception of 40,000 impressions per second, and which measure to 1/50,000-inch by means of light waves. Inspection has indeed caught up with production.

◆

New Bearing Material Is Self-Lubricating

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has developed in its research laboratories a new bearing metal which is self lubricating. Plans are being made to get this metal on a production basis at once, as it promises to be of great value in the making of all sorts of bearings from those in small, delicate apparatus up to those used in steamships and big electrical machinery.

The new bearings are made by mixing one or more metallic powders with other materials yielding a soapy substance. This is put into a cold mold and subjected to a pressure of about 40,000 pounds per square inch. The temperature is then gradually raised to about 400 degrees Fahr. and after holding this temperature for half an hour, the pressure is raised to 200,000 pounds per square inch. After releasing the pressure, the mold is allowed to cool and then the bearing is removed. Bearings can be molded approximately to size, or can be machined from molded stock blanks.

These new bearings can be utilized effectively without oil or grease in places where oiling is difficult and where the operation is intermittent as in automobile starting motors. They are said to be many times as durable as ordinary oil-less bearings in places of that sort. They also can be used to advantage with lubricant in place of ordinary oil-requiring bearings, for the reason that should the oil supply fail, these bearings will continue to run cool for a considerable length of time on account of their inherent lubricating qualities.

◆

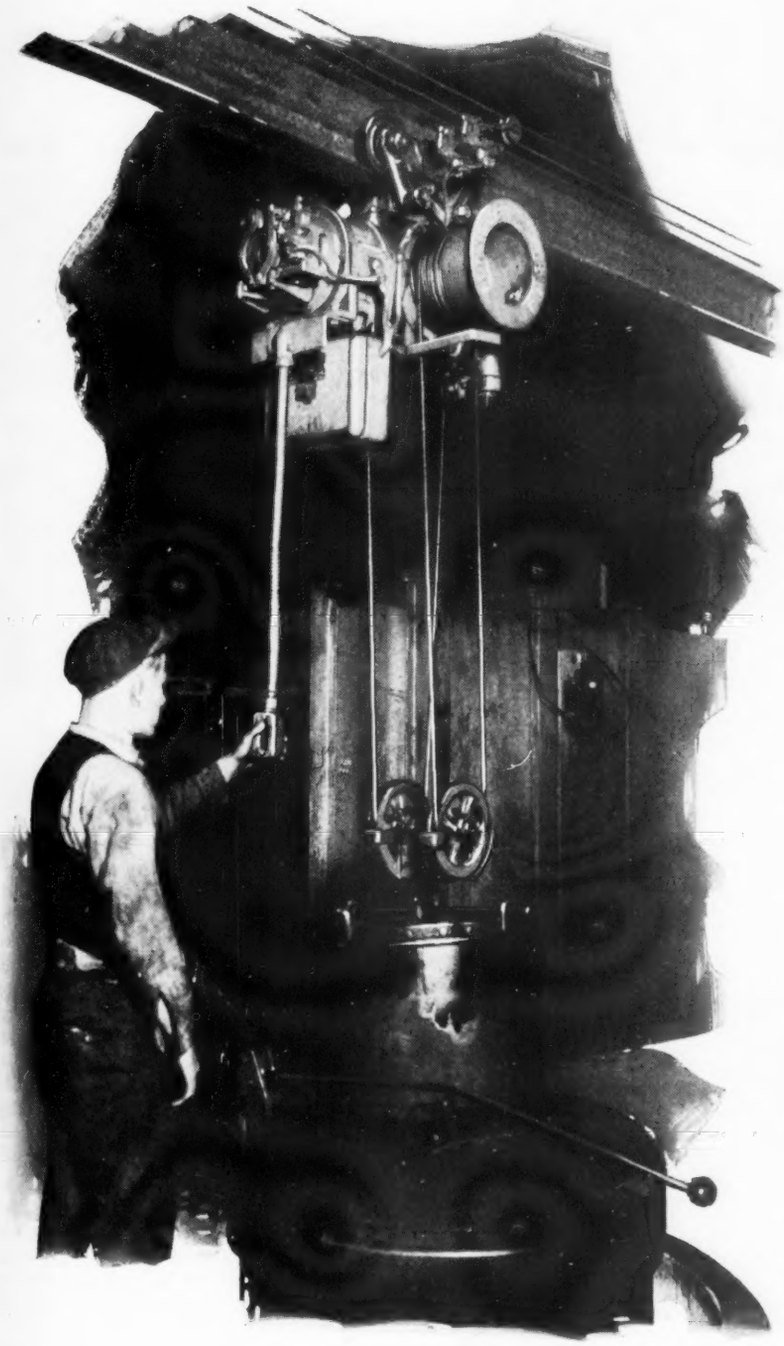
Mixed Gas Reversing Valves Possess Safety Features

Wellman Engineering Co., Cleveland has developed a mixed gas reversing valve which enables combined coke oven and blast furnace gases to be safely and effectively utilized as fuel for regenerative types of furnaces, particularly open-hearth furnaces. One of these new valves appears in the accompanying illustration. Several of them have been in test operation for some time and have proved to be gas-tight and capable of easy and rapid reversal.

Like other reversing valves built by this company, this special mixed gas type has an outer casing, a base with three ports, an inner hood to connect two of the ports, and all operating mechanism is located outside of the casing where it is visible and

PRODUCTION MULTIPLIED *eight times*

... Sprague gave it a lift



DRAWING 1000 bits a day used to be a full day's work at the Detachable Bit Corporation. Hand handling kept the brakes on production. Now, with a Sprague Hoist serving a new drawing furnace, they draw 6000 to 8000 a day!

Sprague charges the furnace ... removes the charge...and carries it into the buffing department. With Sprague Push-Button Control, 1 man can do a 2-man job ...one hand operating the hoist ...the other free to guide the load.

Heat, steam, and dirt have no effect on the Sprague. The simple worm drive, totally enclosed and automatically lubricated, is good for years of carefree service.

Sprague Hoists range in capacity from ¼ to 6 tons ... the rest of the details you'll find in the Sprague Bulletin.

We'll gladly send you a copy, if you say so.

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SHEPARD NILES CRANE & HOIST CORP.
Main Office: 358 So. Schuyler Ave., Montour Falls, N. Y.
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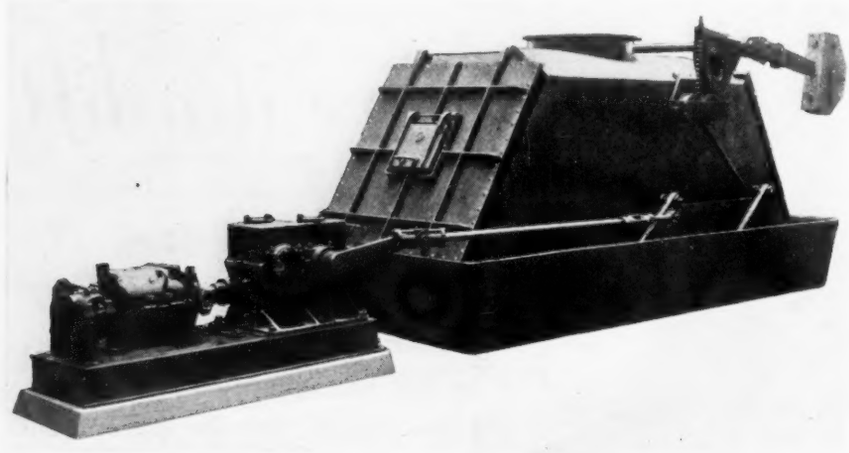


Absolute gas-tightness and quick operation characterize this new line of mixed-gas reversing valves, the one shown being a 48-inch type

easily accessible for maintenance. In this new valve the center port is connected to the chimney, and the waste gases from the furnace flow from whichever outside port the hood is covering, to the chimney port. This leaves a clear passage for the mixed gas, entering the casing through the intake at the top, to pass through a third port to the furnace regenerator. Reversal of the gas flow is accomplished by moving the hood to a position over the center port and the end port previously uncovered.

How Gas-tightness Is Insured

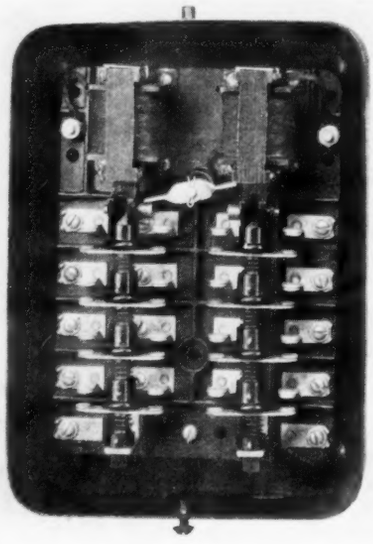
Absolute gas-tightness is secured by making both the casing and the end frames of welded steel plate. The ends are closed by heavy cast iron plates, well ribbed and securely bolted to the welded steel end frames. The undersides of these cast iron plates are grooved to receive an asbestos rope packing. In the center of these end plates there are inspection or explosion doors. Both the casing and the cast steel hood are sealed in 3 inches of water, and the base plate is of steel with gas sealing ribs extending downward into the foundation brickwork, where it is bedded into the soft clay joints. The importance of these elaborate precautions against gas leakage will be appreciated when it is recalled that the mixed coke oven and blast furnace gases are rich in poisonous carbon monoxide.

The valve shown in the illustration is a 48-inch type, fitted with an electrically-operated power reversing unit. The time required for a reversal ranges from 10 to 15 seconds. A hydraulically-operated reversing unit can be applied when desired.

Reversing Switch Handles Small Motors

General Electric Co., Schenectady, N. Y., has just brought out a convenient reversing equipment for small motors, an illustration of which accompanies this description. This switch is designed to handle squirrel-cage motors rated 1½ horsepower at 110 volts, and 2-horsepower motors rated at 220, 440, 550 and 600 volts, 25 to 60 cycles.

The switch consists of two contactors mechanically interlocked and having four sets of contacts and terminals. Three of these contact sets are for power circuits and the remaining one is for the holding circuit of the coil. The terminals are front connected and are marked to facilitate wiring. The equipment is on a compound base for mounting in an enclosed case. The case is suitable for wall mounting and has a removable cover and knockouts for the incoming and outgoing leads. A three-push button control with "Forward," "Reverse" and "Stop" push buttons is recommended.



Reversing equipment for small motors, showing interior mechanism

◆

Unique Clutch Pulley Gives Automatic Pickup

Hill Clutch Machine & Foundry Co., 6400 Breakwater avenue, Cleveland, announces a line of automatic clutch pulleys and clutch couplings which take advantage of centrifugal force in a unique manner to attain their clutch effect. The accompanying illustration is of a pulley.

The casing of the pulley or coupling is serrated lengthwise inside, and with the help of end plates held in place by snap rings the casing serves as a container for a certain amount of chilled shot. The core of the device, which at low speeds turns in the casing, has two wings or impellers which just clear the inside of the casing and through which there are openings for the passage of shot when the clutch is slipping.

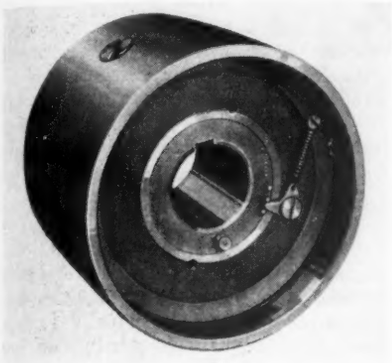
Cycle of Operation

When a motor equipped with one of these clutches starts under load, the impeller unit, which is the driving element, at first turns freely within the casing, throwing the shot evenly to its inside periphery. As the speed increases, centrifugal force acts to pack the chilled shot down tightly into the serrations. The impeller then begins to pick up the load as the tightly packed shot accumulate ahead of its blades. As the motor comes up to speed these masses accumulate to the extent that the impeller gradually becomes locked to the casing and power is transmitted from impeller to casing without slippage, unless an overload occurs. In that event the slipping action starts again and the speed of the driven machine decreases until a safe balance is reached. The slipping point is determined by the size of the charge of shot in the casing, which can be varied to give accurate and permanent adjustments. A simple "tell-tale" device indicates the duration of slippage during starting, and also announces any overloading.

According to the manufacturer, this simple automatic clutch takes the place of complicated starting devices, it permits the use of a smaller and less expensive motor, and of a lighter belt or other transmission medium,

and it acts as a safety device and shock absorber—at the same time saving current and reducing wear and tear on belts and other elements.

The device is furnished as an automatic clutch coupling in 14 sizes, for



Chilled shot and centrifugal force give this clutch unusual characteristics

shafts from ½ to 4¾-inch maximum diameter, and as an automatic clutch pulley in 17 sizes, for shafts from ½ to 4¾-inch maximum diameter. They have maximum horsepower ratings ranging from 0.7 to 122. They can be furnished for special applications such as cone pulleys, rope or V-belt drives, chain drives, etc.

◆

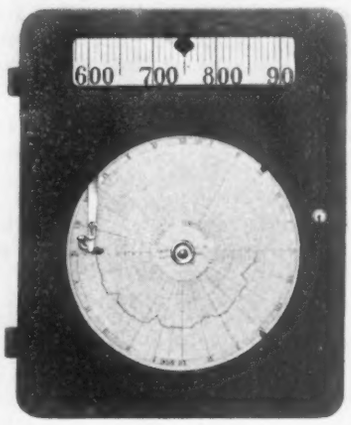
Self-Contact Pyrometer Is Built for Hard Usage

Uehling Instrument Co., 40 Vesper street, Paterson, N. J., has designed a self-contact potentiometer pyrometer primarily intended for measuring exceedingly high temperature encountered in the iron and steel, and ceramic industries. It lends itself equally well, however, to the measuring and recording of any temperatures where a high degree of accuracy is demanded. Either a thermocouple or an electric resistance bulb may be used as the temperature element.

The use of depressor bars, cam mechanisms, and continuously operating motors is entirely eliminated, this being made possible by a method which assures definite and reliable contact between the needle of a galvanometer and stationary contact pieces. There are no auxiliary mechanical devices which might conflict in any way with the indicating needle. This contact method permits the placing of the galvanometer at almost any distance from the recorder. A single galvanometer can be made to actuate as many as four recorders, each in a different location, each measuring a different temperature, and each having an entirely different calibration if desired.

Mechanism Is Accessible

The entire recording mechanism is mounted in a frame hinged to the case, which gives accessibility to all parts of the apparatus. A small motor operates only when necessary to adjust the pen to the proper temperature reading on a clock-driven chart. It is in geared connection with two pulleys over which runs a translucent endless belt, about 2 feet long. This belt is calibrated in temperature units and moves in direct proportion to the pen mechanism, but at a greater speed, back of a pointer fastened to the door. The legibility of the figures, the exceptional length of the scale, and the fact that it is illuminated from the rear, make it easily read under all conditions to a distance of fully 75 feet.



Potentiometer pyrometer indicates and records high temperatures

◆

Turtleback Reinforcement Improves Dipper Doors

American Manganese Steel Co., Chicago Heights, Ill., has recently placed on the market a new type of cast reinforcement for dipper doors. An illustration showing its application appears herewith. This casting, of the so called turtleback variety, is made of manganese steel and is so designed that it can be applied to any dipper door which is flat inside and which has not become distorted. The casting presents a convex surface to the work and is of ample size and strength to protect both door and mechanism against severe shocks and distortion. The reinforcement is intended to reduce wear and to eliminate troublesome door and latch difficulties caused by falling rocks, the shocks from which frequently permanently distort the door sheets. The reinforcement is made in sizes to suit all sorts of

Manganese steel reinforcement plate strengthens dipper doors

dippers, and it is quickly and easily secured to the inside of the door in such a manner as not to interfere with door braces and latch mechanisms.

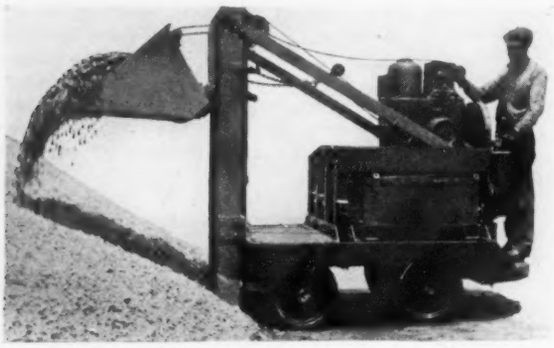
◆

New Electric Shovel Truck Has Four-Wheel Drive

Terminal Engineering Co. Inc., New York, has added to its line of material handling equipment an electric four-wheel drive truck shown in the accompanying illustration. This new machine is small enough to work inside a box car and yet powerful enough to dig and carry 1-ton loads. The shovel is capable of unloading one ordinary box car every hour, carrying its loads to almost any desired place either indoors or outdoors. The machine is rugged enough to stand being run into piles of crushed stone, scrap metal, etc., to lift out a bucketful, and then carry the load over rough ground to the dumping place. The four-wheel drive with separate motor for each wheel gives the necessary traction for pushing the shovel into a pile, and for work in slippery places, on cinder filled yards, in sand, snow, etc. It has a traveling speed of ten miles per hour empty and 8 miles per hour loaded.

The loads are carried in an overhung position, a maximum counterbalance being obtained by locating the battery, hoist, etc., as far away from the load as possible at the opposite end of the frame. The four-wheel drive insures that the heavier the load the greater the traction, regardless of the balance.

The machine is designed with



Small enough to operate in a box car, this four-wheel drive shovel truck will dig and transport a 1-ton load

standard parts for interchangeability. The chassis is the same as used on a heavy-duty crane truck, and the elevating structure can be replaced in a short time by a crane boom. All the main units, such as wheels, batteries, motors, steering mechanism, braking mechanism, hoists, etc., are interchangeable with other models of trucks made by this company. Shovel buckets of various widths for handling various kinds of materials can be furnished. A single hoist controls all the functions of the bucket, and an automatic stop on the upstroke speeds up the operations on short haul work and acts as a safeguard. The uprights, on which the shovel carriage runs, can be built to any desired height. A standard height, shown in the illustration, is that which will work in box cars. The turning radius of the truck is exceptionally short because all four wheels steer, the truck being capable of turning about a point only 2 inches from its side and midway between its axles. There are two sets of brakes, one set mechanical on two wheels, the other set electrical on four wheels, these operating independently from foot pedal and speed controller respectively.

◆

Nibbling Machine Will Cut Heavy Sheet Metal

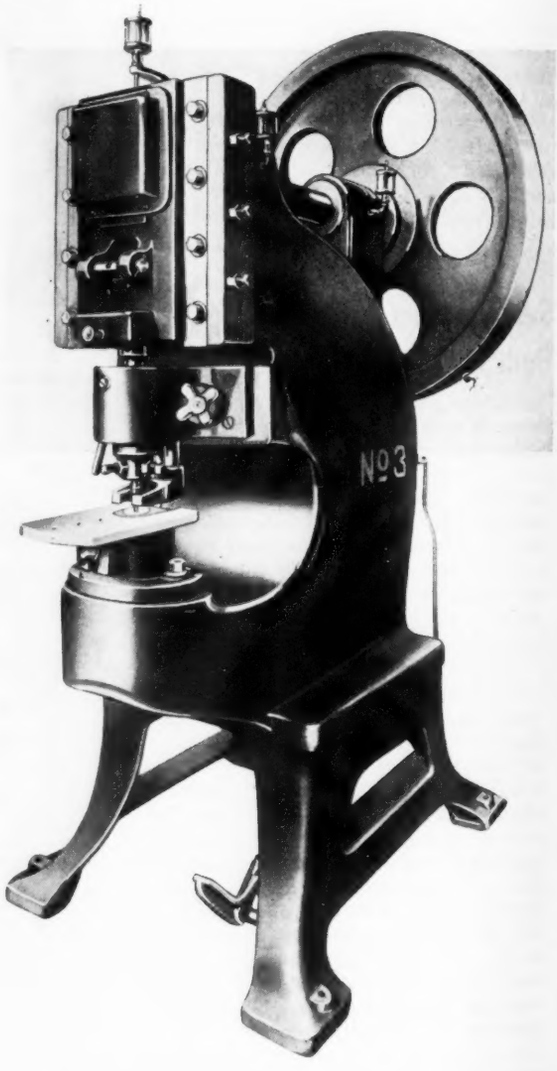
A. C. Campbell Inc., Bridgeport, Conn., has designed a large and more powerful model of nibbling machine for cutting sheet metal forms. As the accompanying illustration indicates, the machine has a heavy frame, giving it a large factor of safety, and it is built for operating convenience.

The circular punch and die principle of operation is employed, a pilot on the rapidly reciprocating punch preventing the work from slipping and also preventing the punch from taking "bites" of too generous size. Circles are accurately cut by the use of the circle cutting attachment. For original cuts of other shapes the use of a straight edge and French curve is recommended, as this insures accurate cutting even by an inexperienced operator. The original piece can then be used as a templet for cutting duplicates, as the punch follows the templet accurately.

The machine uses ⅞-inch diameter punches which cut at approximately 20 linear inches per minute in such a clean manner that little final finishing is required. The speed of the machine makes it desirable on production work which will not justify the making of expensive punches and dies. Three strokes are provided for; ½, 13/16 and 1 inch. The punch can be set quickly in the die by turning a stroke adjustment collar, and the stripper plate is set in correct position by releasing a locking lever and turning a handwheel. Sheet metal from ⅜ up to ¾-inch thick can be handled, making the machine useful on such work as disk cams, which ordinarily are milled.

Principal Specifications

This new nibbler stands 8 feet 6 inches high over the flywheel, occupies floor space of 5 x 4 feet 2 inches, has a throat 15 inches deep, has a 50-inch pulley with 7½ inch face, running at 105 revolutions per minute, and requires 7½ horsepower. The approximate weight is 9000 pounds.



Nibbling action accomplished by a rapidly reciprocating piloted punch makes it possible for this machine to cut even intricate designs from sheet metal ⅜ to ¾-inch thick. Cutting, which is guided by circle attachment, by templet or by scribed lines, is cleanly done at 20 linear inches per minute

Gains in Steel Demand Are Milder

Improvement Loses Some Impetus—Maintaining Operations and Prices Is Producers' Goal This Quarter—Rail Orders Near—Structural Inquiry Is Heavy

AS FOR several weeks, demand for steel shows improvement, but the upward trend has lost some impetus. The rise which made September an encouragingly better month than August appears to have spent itself, and at the turn of the quarter producers are chiefly bent on holding their recent gains.

In fact, appraising the fourth quarter, producers indicate they will account it an accomplishment to maintain their present operating average of 55 to 60 per cent and consolidate the strength they have been imparting to prices.

There is no diminution of confidence that the low point—excepting perhaps the year-end holiday—has been passed, but it is realized that other industries have not shared the gains in steel and that normally the fourth quarter is not a period of heavy consumption or output.

Unfavorable developments outside the industry and unexpected weakness in the automotive situation have proved a dampener in the past week. There are, however, high lights which producers believe will brighten the quarter and preserve a moderately-good though spotty market. Bookings, of course, will shortly be stimulated by orders for railroad track material, but these are for rolling in 1931.

The transition from the third to the fourth quarter is being accomplished with little regard to contracts or price. In isolated instances prices higher than a month ago are obtained, but the strengthening process has been largely a negative one, consisting of the elimination of concessions, and hence stability at third-quarter contract levels is the immediate goal.

Structural shapes continue to present the most active market. Actual awards this week were the lightest in many weeks, being only 14,387 tons, but inquiry is heavy. At New York the largest tonnage of the year is before fabricators, many of whom are operating at close to capacity. Pending work there includes 17,600 tons for subways and 28,000 tons for an elevated roadway.

In a fortnight the railroad track material buying season will be under way. Expected rail inquiry from the New York Central, Santa Fe, Great Northern and Northern Pacific roads at Chicago totals 300,000 tons. The Delaware & Hudson has placed 13,000 tons of rails and 4000 tons of accessories. In the week, 22 passenger cars and ten locomotives were placed.

In sheets, strips, bars and wire, further moderate improvement is reported in most districts in spite of slack automotive buying. Especially in rural areas are wire products moving better. One bar mill at Chicago booked 20 per cent more business in September than in August. Considerable plate business at Chicago hinges on the western oil conservation program.

The betterment in pig iron continues noteworthy. Chicago, New York, Philadelphia, Toronto and St. Louis report heavier sales and inquiry. General Electric Co. has placed 5000 tons for various plants. At Philadelphia 3000 to 4000 tons of low phos iron is on inquiry. A Delaware river pipemaker has closed on considerable southern iron.

Prospects of automotive tonnage this quarter have been considerably dimmed by a reduction in the Ford work week from four days to three, with the daily rate down from 5000 units to slightly over 4000. Except from manufacturers on new models, releases are light.

Steelmaking operations this week appear a shade easier, at slightly over 55 per cent. Cleveland mills hold at 50 per cent, eastern Pennsylvania at 58, Pittsburgh at 55, Buffalo at 53. Chicago at 55-57 per cent is slightly stronger. Birmingham has eased from 50 per cent to 48, and Youngstown from 57 to 53.

Eastern plate mills are making a stand on 1.70c, Coatesville. Bars, plates and shapes are usually 1.60c, Pittsburgh, with 1.65c sometimes asked. Some sheet mills are attempting to firm up at the recent advance, $2 in most grades. Foreign manganiferous and basic ores have been reduced. Southern iron is offered in the North as low as $12, Birmingham.

An adjustment in pig iron in the Youngstown district has lowered STEEL's market composite 4 cents, to $32.52.

Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

This week (Oct. 1, 1930)	**$32.52**
Last week (Sept. 24, 1930)	**32.56**
One month ago (September, 1930)	**32.65**
Three months ago (July, 1930)	**33.21**
One year ago (Oct. 1929)	**36.23**
Ten years ago (Oct. 1920)	**68.61**

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Oct. 1, 1930	Sept., 1930	July, 1930	Oct., 1929
PIG IRON				
Bessemer, del. Pittsburgh	$19.76	20.13	20.46	20.76
Basic, valley	17.00	17.75	18.20	18.50
Basic, eastern del. eastern Pa.	17.75	17.90	18.00	19.75
No. 2 foundry, del. Pittsburgh	18.76	19.13	19.46	19.76
No. 2 foundry, Chicago	17.50	17.50	17.90	20.00
*Southern No. 2, Birmingham	14.00	14.00	14.00	14.00
**No. 2X, Virginia furnace	18.25	18.25	18.25	18.25
**No. 2X, Eastern del. Phila.	19.76	19.76	20.26	22.26
Malleable, valley	18.00	18.35	18.70	19.00
Malleable, Chicago	17.50	17.50	17.90	20.00
Lake Superior, charcoal, del. Chi.	27.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	18.13	18.50	18.83	19.13
Ferromanganese, del. Pittsburgh	103.79	103.79	103.79	109.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $12 to $13, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.60	2.60	2.50	2.65
Connellsville foundry, ovens	3.50	3.50	3.50	3.75
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	31.00	31.00	31.00	35.00
Sheet bars, open-hearth, Pitts.	31.00	31.00	31.00	35.00
Billets, open-hearth, Pittsburgh	31.00	31.00	31.00	35.00
Wire rods, Pittsburgh	36.00	36.00	36.00	40.00

	Oct. 1, 1930	Sept., 1930	July, 1930	Oct., 1929
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.70	1.90
Steel bars, Chicago	1.70	1.70	1.80	2.05
Steel bars, Philadelphia	1.89	1.89	1.94	2.22
Iron bars, Chicago	1.75	1.75	1.90	2.05
Shapes, Pittsburgh	1.60	1.60	1.65	1.95
Shapes, Philadelphia	1.76	1.66	1.66	2.01
Shapes, Chicago	1.70	1.70	1.75	2.05
Tank plates, Pittsburgh	1.60	1.60	1.65	1.95
Tank plates, Philadelphia	1.80½	1.80½	1.85½	2.15
Tank plates, Chicago	1.70	1.70	1.75	2.05
Sheets, blue anl., No. 13, Pitts.	2.15	2.10	2.15	2.35
Sheets, black, No. 24, Pitts.	2.45	2.40	2.55	2.80
Sheets, gal., No. 24, Pittsburgh	3.00	3.00	3.15	3.50
Sheets, black, No. 24, Chicago	2.60	2.60	2.70	3.05
Sheets, blue anl., No. 13, Chicago	2.30	2.30	2.30	2.50
Sheets, galvanized, No. 24, Chi.	3.25	3.25	3.35	3.70
Plain wire, Pittsburgh	2.30	2.30	2.30	2.40
Wire nails, Pittsburgh	2.00	2.00	2.10	2.45
Tin plate, per base box, Pitts.	5.25	5.25	5.25	5.35
SCRAP				
Heavy melting steel, Pitts.	15.75	15.70	14.90	17.30
Heavy melting steel, eastern Pa.	13.00	13.00	12.50	15.80
Heavy melting steel, Chicago	12.25	12.25	12.00	14.45
No. 1 wrought, eastern Pa.	14.25	14.25	14.25	16.00
No. 1 wrought, Chicago	11.25	11.25	11.25	14.85
Rails for rolling, Chicago	14.50	14.50	14.50	17.05

Sheets

More Consumers Contract for Fourth Quarter—Automotive Sales Lag—Prices Still Soft

SHEET PRICES, PAGE 93

Youngstown, O.—Slight but spotty improvement in specifications for steel sheets will raise the operating rates of mills a point or two to 50 per cent this week. Automakers completing cars for dealers have bought small tonnages. Hopes for normal shipments to the motor industry have been largely abandoned for the remainder of the year. Sales to general industrial consumers have improved. Prices are unchanged with slightly more evidence of firmness. Mills are quoting, on a Pittsburgh basis: No. 24 black, 2.45c, No. 24 galvanized 3.00c to 3.10c, No. 9 and No. 10 blue annealed 2.00c to 2.15c, No. 20 autobody 3.50c to 3.60c.

Philadelphia—Sheet and strip bookings are unchanged with some sellers, while others report a slight improvement. The operating rate at eastern mills has gained slightly, now ranging from 65 to 85 per cent. New sheet prices are firmer. Blue annealed are 2.00c and 2.15c, Pittsburgh, for heavy and light gages, respectively. Common black are 2.45c, although concessions are granted on more highly finished sheets taking large extras. The advance in galvanized has not been established and the general price is 3.00c.

New York—Sheets appear firm at the recently announced prices of 3.00c and 3.10c, Pittsburgh, for galvanized; 2.45c for black, and 2.00c and 2.15c for blue annealed plates and sheets, respectively. Sellers report little improvement in buying.

Pittsburgh—Active interest in contracts comprises the major improvement in the sheet market. Orders continue heavier than a month ago and September tonnage is expected to show a marked increase over that of August. Fourth quarter contracting has been stimulated by the belief prices are at bottom, and although some attempts have been made to place contracts for longer periods producers are not interested. Automotive tonnage is in the smallest volume of the year to date but this deficiency is partly offset by increased requirements of the stove and range, farm implement, tank and drum and radio industries. Prices show no tendency to stiffen. Black sheets usually are 2.45c with galvanized continuing 3.00c to 3.10c. Blue annealed sheets and plates are 2.15c to 2.00c, respectively. Autobody is in a nominal market. Mill operations continue around 50 per cent.

Cleveland—September sheet tonnage was less than August's. Fisher Body Corp. has asked for immediate shipment of some material previously ordered for November. Other automotive tonnage is scattered, consisting mainly of small orders. A few makers are endeavoring to move up to the higher price levels announced two or three weeks ago. Effective Sept. 29, they state their minimums are 2.45c for black, 3.10c for galvanized, 3.60c for autobody and 3.70c for metal furniture, base, Pittsburgh. Prices $2 a ton lower, however, have not disappeared. Blue annealed is held at 2.00c and 2.15c for No. 10 and No. 13 gage, respectively, by jobbing mills. Continuous mills go as much as $4 lower.

Chicago—Sheet specifications are making sporadic gains. Jobbers and the galvanized roofing industry have been ordering more material. The district's operating rate remains a shade above 50 per cent. One unit of 10 hot mills will remain down until specifications improve substantially. Concessions in prices are reported but mills profess to see a stronger tone due to the fact the industry as a whole will show decidedly poor earnings for third quarter. Mill quotations are 2.55c for No. 24 black; 3.20c for No. 24 galvanized, and 2.10c for No. 10 blue annealed, with Chicago delivered quotations $1 a ton above the mill prices.

Cincinnati—New sheet business continues to show improvement, partly due to better automotive demand. A Middletown, O., mill reports production this week at 100 per cent.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

SHEET MILL BLACK, NO. 24

Pittsburgh base	2.45c
Detroit, delivered	2.76½c to 2.81½c
Philadelphia, delivered	2.74c
Gary, Indiana Harbor	2.55c
Chicago, delivered	2.60c
Birmingham, base	2.60c to 2.65c
St. Louis, del.	1.80½c

TIN MILL BLACK, NO. 28

Pittsburgh, base	2.70c to 2.80c
Gary, base	2.90c to 3.00c

GALVANIZED NO. 24

Pittsburgh, base	3.00c to 3.10c
Philadelphia, delivered	3.29c to 3.39c
Gary Indiana Harbor	3.20c
Chicago, delivered	3.25c
Birmingham base	3.15c to 3.20c
St. Louis, del.	3.45½c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base	2.15c
Chicago, district mills	2.25c
Chicago, delivered	2.30c
St. Louis, delivered	2.50½c
Philadelphia, delivered	2.44c
Birmingham	2.30c

BLUE ANNEALED PLATES, NO. 9-10

Pittsburgh, base	2.00c
Chicago, district mills	2.10c
Chicago, delivered	2.15c
Philadelphia, delivered	2.29c
St. Louis, delivered	2.35½c
Birmingham	2.15c

AUTOMOBILE NO. 20

Pittsburgh base	3.50c

FURNITURE NO. 24

Pittsburgh	3.60c to 3.70c

Tin and Terne Plate

Prices per 100-pound box Pittsburgh

Tin plate, coke base	$5.25
Gary, Ind., base 10 cents higher.	
Long ternes, 24, primes	3.55c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

Standard wire nails	$2.00 to 2.10
Cement coated nails	2.00 and 2.10
Galvanized nails	4.00 and 4.10

(Per pound)

Polished staples	2.45c and 2.55c
Galvanized staples	2.70c and 2.80c
Barbed wire, gal.	2.65c and 2.75c
Annealed fence wire	2.15c and 2.25c
Galvanized wire	2.60c and 2.65c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.30c
Spring wire	3.30c
Wire, delivered Detroit	2.53½c
Nails, delivered Detroit	$2.38½

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Rivets

Struc. c.l., Pitts.-Cleve.	2.75c
Struc., c.l., Chicago	2.85c
**7/16-inch and smaller, Pitts.	70, 10 and 5 off
Chi., Cleve.	70 to 70, 10 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Steel Plates

Base, Pittsburgh	1.60c
Philadelphia, del.	1.80½c
New York, del.	1.88c
Boston, del.	2.05c
Chicago, base	1.70c to 1.75c
Cleveland, delivered	1.78½c to 1.88½c
Lackawanna, N. Y., base	1.80c
Birmingham, base	1.80c to 1.85c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	2.15c to 2.25c
St. Louis, del.	2.00½c

Structural Shapes

Base, Pittsburgh	1.60c
Philadelphia, del.	1.76c
New York, del.	1.75½c to 1.85½c
Boston, del.	1.88½c to 1.98½c
Chicago, base	1.70c to 1.75c
Cleveland, delivered	1.83½c to 1.88½c
Lackawanna, N. Y.	1.80c
Birmingham, base	1.80c to 1.85c
Pacific Coast, c.i.f.	2.15c to 2.25c
Detroit, del.	1.91½c to 1.96½c

Bars

SOFT STEEL

Pittsburgh, base	1.60c to 1.65c
Chicago, base	1.70c to 1.75c
Birmingham, base	1.80c to 1.85c
Lackawanna, N. Y., base	1.85c
Pacific Coast, c.i.f.	2.35c
Cleve. base, local del.	1.65c
Do, outside delivery	1.60c
Philadelphia, del.	1.89c to 1.94c
New York, delivered	1.98c
Boston, delivered	2.05c
Pittsburgh, cold finish	1.80c
Pittsburgh, forg. qual.	1.90c

RAIL STEEL

Chicago Heights	1.65c
Eastern mills	1.65c

IRON

Chicago, base	1.75c
New York, delivered	1.93c to 1.98c
Philadelphia, delivered	1.89c to 1.94c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.90c to 2.00c
Stock lengths, mill	1.65c to 1.75c
Chi. billet, over 500 tons	1.75c to 1.85c
30 to 200 tons	2.00c
Under 30 tons	2.45c to 2.85c
Chi., rail steel, over 30 tons	1.50c
Under 30 tons	2.10c to 2.50c
Philadelphia, cut lengths	2.04c to 2.09c

Cold-Finished Steel

Bars, Pitts., Chi., Buff., Cleveland	2.10c
Do, delivered, Detroit	2.20c
Shafting (turned, polished) Pitts., Buffalo	2.10c
Do, (turn., ground) mill	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets, 35c; plates 31c; bars 28c

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	22c	23.5c	26c	31c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	6.70 to 6.80 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bar Base is 2.65c

S.A.E	Alloy Diff.	S.A.E	Alloy Diff.
2000	0.25	1.25-1.75 Ni.	1.05
2100	0.55	5100 .80-1.10	
2300	1.50	Cr.	0.45
2500	2.25	5100 Chr.	
3100	0.55	spring	0.20
3200	1.35	6100 bars	1.20
3300	3.80	6100 Spring	0.95
3400	3.20	Chr., Ni., Van.	1.50
4100 .15 to .25 Mo.	0.50	Carbon Van.	0.95
4600 .20-.30 Mo.		9250 (flats)	0.25
		9250 (rds., sq.)	0.50

Strip, Hoops, Bands

Hot strip, to 6-in., Pitts.	1.70c to 1.75c
Hot strip 6 1/16 to 24-in., Pitts.	1.60c to 1.65c
Hot strip, bands 6 in. and under, Chicago	1.85c
Do, 6 1/16 to 24 in.	1.75c
Cooperage hoop, Pitts.	1.90c to 2.00c
Do, Chicago	2.00c to 2.10c
Cold rolled strip., Pitts., Cleve., 3 tons, over	2.35c to 2.45c
Worcester, 3 tons, over	2.60c to 2.70c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 28.00
Light rails, 25-45, mills	$34.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.80c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.80c
Spikes boat, barge, Pitts	3.00c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plates, mills	$41.50

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 73 off

MACHINE BOLTS

All sizes cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 off
Tire bolts, 60, 10 and 10 off.
Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 73 off

***HEXAGON CAP SCREWS**

Milled ..... 80-10-5 off
Upset 1 in. diam. and smaller ..... 85-10 off

***SQUARE HEAD SET SCREWS**

Milled ..... 85-5 off
Upset 1 in. and smaller ..... 80-10-5 off

*Discounts dated Jan. 23, 1930

Cut Nails, Chain, Piling

Cut nails, c.l., mills	2.45c
Do, less carloads	2.55c
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	2.00c

Bars

Increase in Bookings Is Maintained—Fourth Quarter Contracts Well Advanced.

BAR PRICES, PAGE 93

Chicago — Gains established a week ago in bar specifications are being held. Inquiry continues promising, several fourth quarter tonnage contracts being under negotiation. One producer reports an increase over August of about 18 to 20 per cent in September bar mill bookings. Thus bars are leading the plate market, where unfilled orders have declined. Implement schedules will be interrupted for a short time through inventory taking on Oct. 1 by several of the plants, although prospects have improved. Chief tractor activity is against the Russian orders now being assembled. Road machinery and excavating equipment builders are specifying at a fair rate. A firmer tone has developed in soft steel bars and other finished steel. Mills are naming 1.70c, Chicago, as the minimum and are seeking to hold 1.75c as the base for odd-lot tonnages.

New York—The next two weeks is expected to put 1.65c, Pittsburgh, on steel bars to a test. At the moment some commitments still are out at 1.60c, but these are due to be closed shortly. Meanwhile, most important sellers are quoting firmly at 1.65c on new business. Buying is showing little pickup.

Philadelphia—Bookings of steel bars again have slightly increased in this district. While 1.65c, Pittsburgh, still is being quoted, the usual figure is 1.60c and most consumers have placed fourth quarter contracts at that price and in some instances lower prices have been extended to fourth quarter.

Pittsburgh—Steel bars continue 1.60c to 1.65c in new contracting. The general market remains 1.65c but larger tonnages are going at the lower figure. Incoming tonnage showed a moderate improvement during September. Cold bar finishers have increased their requirements rather substantially over the light August rate but total demand still is small for this period. Forward buying as well as contracting remains restricted.

Cleveland—Specifications for carbon bars continue steady at the low level of the past few weeks, Automotive requirements are disappointing, the increases of a few consumers for new models failing to offset a gradual sinking in the needs of others. Farm implement and bolt, nut and rivet interests also are light takers. For local delivery carbon bars usually are 1.65c, base, Cleveland. For outside deliver y 1.60c, base, Cleveland, is quoted.

Cold Finished Sales Light but Rise from August

Cold Finished Prices, Page 93

Pittsburgh—September business in cold-finished steel bars showed a marked improvement over the poor August volume, the average gain for the industry probably being more than 15 per cent. Automotive requirements remain seasonally light despite a moderate pickup during September. Consumers are buying in small lots and show little inclination to order ahead. The market is holding at 2.10c, the last decline in hot bars not having been reflected in the cold finished bar market.

Cleveland—Cold-finished bar tonnage still is low. Automotive improvement at best is spotty and other consuming lines take meager tonnages.

The aggregates sales for the month will do well to come up to the August total. It will, however, be ahead of July. The market is 2.00c to 2.10c.

Plates

More Refinery Work in Prospect but Shipments for Pipe Slow Up—Prices Are Steadier

PLATE PRICES, PAGE 93

Chicago—While refinery work is promising in the plate market, shipments to the Milwaukee pipe welder are expected to drop sharply. September shipments for electrically welded pipe amounted to 40,000 to 50,000 tons. It is understood further work on one project will be held up awhile. This producer has been turning out 30 to 35 miles of pipe daily for about three months. While it is understood about 20,000 tons of plates are outstanding for refinery storage work, much of this tonnage depends upon future conservation policies in the Oklahoma fields. About 1000 tons have been added to inquiry. From 700 to 1000 tons have been awarded in miscellaneous tank work. Plate mills are continuing 80 per cent operations, a drop of about five points since early in the month. Plate quotations are 1.70c to 1.75c, Chicago.

New York—While the 1.70c, Coatesville, Pa., price on plates has not become firmly established, the market appears steadier at this figure. A general improvement in buying is noted, though pipe and ship work is developing less rapidly than expected a month ago. Placing of steel for four Pacific Mail boats, on which bids were opened early this month, is likely to be delayed. The Federal Shipbuilding Co. and the Bethlehem Shipbuilding Corp. were low, but it appears prices have exceeded the expectations of the steamship company. The Lock Joint Pipe Co., Ampere, N. J., manufacturer of concrete pipe, is low on 4500 tons of 42-inch pipe gfor Wilmington, Del.

Philadelphia—Demand for plates is increasing from two directions. Railroads have ordered round tonnages, making this the best week in some time. Large tonnages also have been placed for oil requirements. Miscellaneous business is unchanged. Eastern plate mills are operating at an average of 50 to 55 per cent. The price continues 1.70c, base, Coatesville, Pa., subject to the usual differentials.

Pittsburgh—Plate demand holds at the rate of the preceding several weeks. The Gulf Refining Co. has placed 2400 tons for storage and refinery tanks at its new Cincinnati refinery. Barges for this company remain pending. Plate requirements for freight car builders are declining. Plates continue 1.60c, Pittsburgh.

Cleveland—The majority of plate orders comprise single carloads. Pure Oil Co. awarded contracts to Chicago Bridge & Iron Works, Chicago, and Reeves Bros. Co., Alliance, O., for tanks taking 3000 tons. The tonnage is in addition to that for this buyer noted last week. Plate contracting for fourth quarter is lacking. Prompt orders are taken at 1.60c, Pittsburgh.

Contracts Placed

3000 tons, work for Pure Oil Co., divided between Chicago Bridge & Iron Works, Chicago, and Reeves Bros. Co., Alliance, O.

2400 tons, storage and refinery tanks, Cincinnati, for Gulf Refining Co.,

Pittsburgh, to McClintic-Marshall Co., Pittsburgh.

Contracts Pending

Unstated tonnage, 1,500,000-gallon elevated water tank for Milwaukee; bids Oct. 9.

Tin Plate Demand Shows Seasonal Moderation

Tin Plate Prices, Page 93

Pittsburgh—Tin plate operations are tapering in line with the usual seasonal trend. Production is around 70 2per cent, with the average for independent producers below this figure. Specifications are fair but are well below the volume of 30 to 60 days ago. Canning of corn and tomatoes continues active but most of the tin plate for this purpose has been produced. The market continues $5.25 per base box.

Foreign Manganiferous and Basic Ores Lower

Iron Ore Prices, Page 104

New York—Foreign ore prices have been readjusted. Swedish basic, 65 per cent, now is 9.50c per unit, alongside docks, compared with the previous spread of 9.50c to 10.50c. Spanish and North African basic ores, 50 to 50 per cent, also are 9.50c, compared with 9.50c to 10.00c formerly. Foreign manganiferous ore, 45 to 55 per cent iron, and 6 to 10 per cent manganese, is slightly stronger, 10.50c having disappeared, leaving 11 cents the going price. These prices will likely be subject to severe test shortly, as seasonal contracting is getting under way. North African and Swedish low phosphorus ores are unchanged at 10.50c and 11.00c per unit, alongside docks, respectively. Newfoundland foundry, 55 per cent, is unchanged at 9.00c. Eastern local ores also remain unchanged, although nominal.

Caucasian manganese, 52 to 55 per cent, the Indian, 48 to 50 per cent, are unchanged at 27.00c to 28.00c per unit, not including duty, in cargo lots, and Brazilian, 46 to 48 per cent, at 25.00c. The first shipment of South African manganese ore is expected to arrive in this country in November or December.

Despite the recent reduction in domestic fluorspar, to $17.25 a net ton, f.o.b. mines, Kentucky and Illinois, the market on important fluorspar continues unchanged at $19.50, duty paid per gross ton, 85 and 5 per cent.

Railroads

Rail Inquiry to Total 300,000 Tons by Oct. 15—Car Orders, Inquiries Continue Slow

TRACK MATERIAL PRICES, PAGE 93

Chicago—Indications are that Santa Fe, Great Northern and Northern Pacific will inquire soon for 30,000 tons of rails. This figure may be advanced to more than 100,000 tons if Santa Fe's west coast needs are included, and if New York Central's inquiry materializes the total may reach 300,000 tons within another month. Rail mill operations decline as old commitments are cleaned up. Track fastenings sales amounted to only a few hundred tons.

Freight car shop specifications in finished steel have almost disappeared. No fresh equipment orders are in sight. Chicago, Milwaukee, St. Paul & Pacific railroad is starting to build ten steel mail-and-express cars and do a fair amount of repair work to passenger equipment in its own shops.

Boston—Boston & Albany placed 1900 tons of tie plates with Jones & Laughlin Steel Corp. This is one of the largest orders of this kind placed by any New England railroad in some time.

New York—Car buying continues spotty. Fresh inquiry is negligible. Indications are that September will be the lightest month this year in car orders. Locomotive demand continues restricted.

Preliminary estimates place September domestic car buying at 535 units, the lowest monthly total for the year. This would bring the total for the first nine months to 35,557, virtually half the number for the corresponding period, 1929.

Pittsburgh—September specifications for track material were slightly larger than August's but still are seasonally light. Inquiry for rails and fastenings as well as freight cars is slow to expand. Relaying rails are slightly more active with somewhat of a scarcity developing in larger sections. The market on 60 to 90-pound rails continues $24 to $28. Light rails are dull.

Cleveland—Chesapeake & Ohio railroad has augmented its inquiry for track fastenings, including 5300 kegs of bolts, 2500 kegs of spikes and 16,000 tie plates, by the addition of 2000 tons of screw spikes.

Birmingham, Ala.—No intimation is given as to when rail and accessory orders will be placed. Improvements are taking the attention of rail mill operators. Labor usually employed in the rail mill is not leaving the district and no delay will be occasioned when demand warrants resumption.

Car Orders Placed

Chicago, Burlington & Quincy, 10 baggage cars, to own shops.

Chicago, Milwaukee, St. Paul & Pacific, 10 mail and express cars, to own shops.

Erie, two mail and baggage cars, to Bethlehem Steel Co., Bethlehem, Pa.

Tennessee Copper Co., recently noted as leasing 50 tank cars, will be supplied with equipment to be built in the shops of General American Tank Car Corp.

Locomotive Orders Placed

Norfolk & Western, 10 Mallet type locomotives, to own shops at Roanoke, Va.

Rail Orders Placed

Delaware & Hudson, 13,000 tons of rails and 4000 tons of track accessories, to Bethlehem Steel Co., Bethlehem, Pa.

Car Orders Pending

Amtorg Trading Corp., New York, 10 70-ton air dump cars.

Locomotives Pending

Santa Maria Valley, one 2-8-2 type locomotive.

Semifinished Quiet; Wire Rod Price Renewed

Semifinished Prices, Page 104

Pittsburgh—Few inquiries for semifinished steel are appearing to test the market. Orders usually call for small lots, although there has been a moderate improvement in such business since a month ago. Producers generally quote $31 for rerolling billets, slabs and sheet bars. Forging billets are $5 higher.

Philadelphia—Contracts for wire rods for fourth quarter have been renewed at $36, base, Pittsburgh. Small sales of billets for quick shipment are noted at unchanged prices.

Chicago—Semifinished steel orders are fair. Not much change has occurred in the last 30 days. Small billets are quoted $32, base, Chicago, while forging billets are $37.

Cleveland—Consumers are not placing definite contracts for fourth quarter, but are being carried on the books of the leading merchant producer here, to receive material when specified and at price at time of delivery.

Structural Shapes

Award Total Drops Precipitately—Small Jobs Still Numerous — Inquiry Rate Heavily Maintained by Large Engineering Projects in the East, Subways, Etc.

STRUCTURAL SHAPE PRICES, PAGE 93

New York—Fourth quarter opens with the heaviest structural tonnage of the year pending for bridges and engineering work, including 28,000 tons, third section, West side elevated highway. Subways are again active, 17,600 tons. Penitentiary, Rikers island, will require at least 10,000 tons. Additional tonnage will also be needed for the new route to Holland tunnel over the Jersey meadows. Several contracts will also come out this month for the Triboro bridge. Bids are being asked on test borings for the Brooklyn-Staten Island tunnel, the largest yet built in New York, construction to take five years. Apartment and industrial building are also active. Awards are temporarily lower. Prices are firm, mills holding to a basis of 1.70c, Bethlehem.

Boston—New England fabricators booked about 700 tons last week, as well as a substantial total of small jobs. Two hangars at Hartford, Conn., took 300 tons.

Chicago—Shipping orders for plain structural material are sufficient only for about 60 per cent mill production. Fabricators' prices are decidedly irregular as several are basing figures in bids on low priced steel bought in recent months. Quotations for plain material are based on 1.70c, mills. Smaller fabricating shops are embargoing shipments against contracts, while larger fabricators are taking specifications according to recently established monthly schedules.

Philadelphia—Eastern shape mills continue to book pending tonnages at old prices but insist that effective Oct. 1, the minimum price on standard shapes will be 1.70c, base, nearest eastern mill, which is equivalent to 1.76c, delivered, Philadelphia. Operating rates were lowered in some cases to 50 to 65 per cent with average around 60.

Buffalo—Awards totaling nearly 1000 tons of fabricated material were divided among three producers.

Pittsburgh—Fabricated shape awards continue light with inquiry dull. Local fabricators are figuring on the Cincinnati viaduct job requiring 5000 tons. Bids are expected shortly on the West End-North Side bridge here. Plain shapes continue 1.60c, Pittsburgh.

Cleveland—McClintic-Marshall Co. was awarded 775 tons for the Cleveland Clinic hospital building. Other lettings are scarce, particularly large amounts. Small jobs are fairly numerous for bridges, additions and alterations, etc. Specifications are fair but fourth quarter contracting is quiet. Makers are making an effort to establish the 1.60c, Pittsburgh, as a minimum.

Cincinnati—Awards for nine Kentucky bridges have been deferred after a tie vote of the Kentucky state highway commission on policy.

Birmingham, Ala. — Scattering orders in small tonnages have been sufficient to warrant operation of structural steel fabricating shops here at least five days weekly. Several specifications are in sight.

Contracts Placed

2000 tons, bridge over Moose river, Moose River, Ont., for Toronto & Northern Ontario railway, to Hamilton Bridge Co. Ltd., Hamilton, Ont.

1500 tons, two viaducts, Canadian Pacific railroad, near Calgary, Alta., to Hamilton Bridge Co. Ltd., Hamilton, Ont.

1000 tons, Seamen's Y. M. C. A., Eleventh avenue and Twenty-second street, New York, to Post & McCord Inc., New York.

1000 tons, 17-story apartment, 1175 Madison avenue, corner of Eighty-sixth street, New York, to Hay Foundry & Iron Works, New York, Rhoades-Kennedy Corp., builder.

775 tons, Cleveland Clinic hospital building, Cleveland, to McClintic-Marshall Co., Pittsburgh; Crowell & Little Construction Co., general contractor.

750 tons, grade separation viaduct over Indiana Harbor Belt Line railroad, La Grange, Ill., to Gage Structural Steel Co., Chicago.

685 tons, state bridge work in Minnesota and South Dakota, to Minneapolis-Moline Power Implement Co., Minneapolis.

650 tons, state highway bridge, Maine, to American Bridge Co.

650 tons, building, American Rolling Mill Co., Ashland, Ky., to Hiner Structural Steel Co., Canton, O.

600 tons, apartment, 102 Eighty-fifth street, New York, to Paterson Bridge Co., Paterson, N. J.

600 tons, Central Union school, Niagara Falls, N. Y., to Buffalo Structural Steel Co., Buffalo.

470 tons, H columns, Honolulu Oil Co., San Francisco, to Pacific Coast Steel Corp., San Francisco.

350 tons, hotel at Dearborn, Mich., for Henry Ford, to Whitehead & Kales Co., Detroit; Martin-Krausmann Co., Detroit, general contractor.

350 tons, two hangars, United Airport field, Hartford, Conn., to Levering & Garrigues Co., New York.

300 tons, school, Larchmont, N. Y., to Grand Iron Works, Bronx, N. Y.; Charles G. Maiolino Construction Co., Mamaroneck, N. Y., general contractor.

275 tons, industrial plant, Cornell & Underhill, pipe manufacturers, Hoboken, N. J., to Oltmer Iron Works, Jersey City; Bonnano Bros., Union City, N. J., general contractors.

275 tons, dormitory, Harvard university, Cambridge, Mass., to New England Structural Co., Boston.

270 tons, apartment, Vallejo street, San Francisco, to McClintic-Marshall Co., San Francisco.

250 tons, two viaducts in the Empress subdivision near Calgary, Alta., to Hamilton Bridge Co., Hamilton, Ont. at a cost of about $250,000.

236 tons, state highway bridge work in Minnesota, to American Bridge Co., Chicago.

200 tons, steel joists, several buildings in Los Angeles to Soule Steel Co., Los Angeles.

200 tons, Catholic shrine, Auresville, N. Y., to McClintic-Marshall Construction Co., Buffalo.

176 tons, rock crushing plant, Livermore, Calif., to Western Iron Works, San Francisco.

150 tons, state highway bridge, Maryland, to American Bridge Co.

150 tons, apartment, Polk avenue, Jackson Heights, Queens, N. Y., to Kalper Iron Works, Brooklyn, N. Y.

135 tons ,substation, 134th street, New York Central railroad, New York, to Buckingham Steel Co., Brooklyn, N. Y.; Miller-Blyth Inc., general contractor.

130 tons, incinerator building, Cedarhurst, N. Y., to Buckingham Steel Co., Brooklyn, N. Y.; United Fireproofing Co., general contractor.

125 tons, highway bridge, Hartford county, Maryland, to Shoemaker Bridge Co., Pottstown, Pa.

125 tons, bridge, Baltimore & Ohio railroad, Keyser, W. Va., to Phoenix Bridge Co., Phoenixville, Pa.

125 tons, school auditorium, Long Beach, Calif., to Pacific Iron & Steel Co., Los Angeles.

120 tons, bridge, Pennsylvania railroad, Lanham, Prince George's county, Md., to American Bridge Co.

110 tons, apartment, Ninety-fifth street, Brooklyn, N. Y., to Kalper Iron Works, Brooklyn; A. & A. Construction Co., builder.

105 tons, apartment, Humbert street, Brooklyn, N. Y., to Diamond Iron

Awards Compared

	Tons
Awards this week	14,387
Awards last week	35,492
Awards two weeks ago	27,288
Awards this week in 1929	50,429
Av. weekly awards, 1930	35,534
Av. weekly awards, 1929	42,213
Av. weekly awards, Sept.	39,163
Tot. awards to date, 1929	1,681,406
Tot. awards to date, 1930	1,421,345

Works, Brooklyn; Roside Building Corp., owner.

100 tons, power house, Sutro & Sons, Philadelphia, to American Steel Engineering Co., Philadelphia.

100 tons, signal bridges, Boston & Maine railroad, to Boston Bridge Works Inc., Boston.

100 tons, addition, W. A. Case Co., Buffalo, to Kellogg Structural Steel Co., Buffalo.

100 tons, factory, Thirty-sixth avenue, Brooklyn, N. Y., to Kalper Iron Works, Brooklyn.

100 tons, 522-foot bridge over Fourche river, Parkes-Gravelly road, Scott county, Arkansas, for highway commission, to Vincennes Bridge Co., Vincennes, Ind., at $48,892.

100 tons, plant building, Morgan Lines Co., Albany, N. Y., to Eastern Bridge & Structural Co., Worcester, Mass.; Feeney & Sheehan, Albany, N. Y., general contractors.

Contracts Pending

28,000 tons, third section, West side elevated highway, Fifty-ninth to Seventy-second street, New York; bids in about two weeks. Plans completed by New York Central engineers approved by department of engineering, Manhattan, N. Y.

12,500 tons, subway, route 108, section 6, Sixty-fourth road, Queens, N. Y.; bids close Oct. 14. This section originally opened for bids in April; rejected and revised.

10,000 tons, penitentiary buildings, including power house, department of correction, New York, Rikers Island, East river, Bronx county, bids Oct. 20; total work will probably exceed above tonnage.

5100 tons, subway route 107, section 8, Lafayette street, Brooklyn, N. Y.; bids closed Sept. 26; Clemente Contracting Co. low.

2500 tons, building, Girard Trust Co., Philadelphia; Day & Zimmerman, contractors.

2400 tons, Mills building, San Francisco; bids Oct. 9.

1760 tons, state highway bridges in Missouri.

1500 tons, apartment, Hudson street, New York.

1500 tons, assay building, United States treasury, Old Slip and South streets, New York; Great Lakes Construction Co., Chicago, low, $1,673,292.

1200 tons, armory, 104th F. A., New York National guard, 168th street, Jamaica, N. Y.; bids in November.

1000 tons, apartment, Christopher street, New York.

1000 tons, National Transit Pump & Machine Co., Oil City, Pa.

725 tons, state highway bridge, Lycoming county, Pa.; general contract to T. J. Foley & Co., Pittsburgh.

650 tons, normal school buildings, Plattsburg, N. Y.

600 tons, postoffice, Lafayette, Ind.; bids Oct. 18.

600 tons, highway bridges in Minesota.

560 tons, Atlantic avenue bridge, Los Angeles; Oberg Bros., general contractors.

400 tons, addition, public school No. 72, Dewey avenue, Bronx, N. Y.; bids Oct. 7.

400 tons, building for Newport Chemical Co., Carrollville, Wis.

325 tons, federal bridge, Beaver creek, Trempealeau county, Wis.; bids close Oct. 10.

320 tons, state highway bridge, Delaware county, Pa.

300 tons, subway, Church-Franklin street connections Eighth avenue and Worth street route, New York; bids in.

300 tons, bridge on Flagstaff highway, Phoenix, Ariz.; bids Oct. 15.

260 tons, building, Wheeling Corrugating Co., Philadelphia; revised bids asked.

255 tons, state bath houses, South Boston, Mass.

250 tons, building, Yuengling Garage Co., Pottsville, Pa.; general contract to Ink Construction Co., Reading, Pa.

250 tons, Rising Sun avenue bridge, Philadelphia.

250 tons, Mascher street bridge, Philadelphia.

225 tons, building, Federal prison, Petersburg, Va.; Virginia Bridge & Iron Co., Roanoke, Va., low bidder.

205 tons, bridge at Saligman, Ariz.; bids opened.

200 tons, addition, public school No. 11, Dongan Hills, Staten Island, N. Y.; bids in.

200 tons, grade crossing eliminations, New York Central railroad.

200 tons, bridge over Thames river, Chatham, Ont.; A. L. Thompson, city manager, taking bids.

175 tons, normal school addition, Worcester, Mass.

165 tons, bridge, Pennsylvania railroad, New Brunswick, N. J.; bids temporarily rejected.

140 tons, state highway bridge, Lehigh county, Pa.

120 tons, state highway bridge, Lehigh county, Pa.

100 tons, hospital, Southbridge, Mass.

Unstated tonnage, court house and customs house, Toledo, O.; bids close Oct. 11.

Unstated tonnage, steel girder bridge over Humber river, with concrete piers abutments and parapets; board of control, Toronto, Ont., to take bids to Oct. 21.

Concrete Bars

5000-ton Sewer Job in Kentucky Aids Total—Important Road Work Keeps Eastern Market Active—Prices Advanced $1 to $2 a Ton Oct. 1 in New York

REINFORCING BAR PRICES, PAGE 93

New York—Close to 3000 tons is being placed for New Jersey highway and bridge construction, and 1500 tons for the Hudson river bridge plaza route went to Truscon Steel Co. Efforts are being made to strengthen and hold prices to 1.70c, base, Pittsburgh, effective Oct. 1. This represents an advance of $1 to $2 a ton over what the bulk of tonnage moved in this territory has carried.

Boston—The contract for 200 tons of concrete bars for the Western Union building here went to Concrete Steel Co. An assortment of small projects totaling about 200 tons brought lettings for the week to about 400 tons. Two large projects are pending.

Pittsburgh—Concrete bars continue quiet with September tonnage smaller than August's. A fair amount of work remains pending but closing has slowed up. Prices continue 1.90c to 2.00c for cut lengths and 1.65c to 1.75c for stock lengths.

Cleveland—A fair number of small jobs taking concrete bars is awarded each week. The latest is the Cleveland Clinic hospital, taking about 100 tons. It went to Paterson-Leitch Co. Concrete bars usually are quoted 1.65c, Cleveland.

Chicago—Building inquiries in reinforcing bars have dropped off. Road and bridge projects are fair. Prices for the latter are firm. Shipments on pending road and bridge work are being rushed.

Birmingham, Ala.—Reinforcing bar shipments still are fairly steady. A few inquiries are in hand which promise additional business. The cotton tie season is almost over, though much of this light steel is moving. Structural work and road building is being solicited by reinforcing bar producers with the hope of continuing full time operation of shops.

Awards Compared

	Tons
Awards this week	**11,422**
Awards last week	**13,179**
Awards two weeks ago	**3,777**
Awards this week in 1929	**8,645**
Av. weekly awards, 1929	**5,849**
Av. weekly awards, 1930	**7,027**
Average weekly awards Sept.	**7,104**
Total awards to date, 1929	**249,254**
Total awards to date, 1930	**281,086**

Contracts Placed

5000 tons, sewer work in Louisville, Ky., to McClintic-Marshall Co., Pittsburgh; Foundation Co., Pittsburgh, general contract; deliveries now being made.

1500 tons, roadwork, routes 1, 4 and 6, section 6, Christies lane to Bridge

(*Concluded on Page* 101)

Strip

Some Increase in Tonnage from General Users—Fourth Quarter Contracts at Current Prices

STRIP PRICES, PAGE 93

Chicago—While hot rolled strip steel tonnage is more diversified gains are slight. Automotive tonnage is not improving. Hot strip mill operations remain at 50 to 60 per cent. The price for hot rolled under 6 inches is 1.85c, Chicago, while wider strips are quoted 1.75c, base. Cold-rolled strip mills here have no important backlogs. Only moderate automotive business is coming from parts makers and automobile builders. Tonnage is taken at 2.35c, Pittsburgh-Cleveland, while the nominal quotation for miscellaneous orders is 2.45c.

New York—Hot rolled strip steel is moderately steady at 1.65c, Pittsburgh, for the wide, and 1.75c, for the narrow. Cold rolled strip is being generally quoted at 2.35c, Pittsburgh. Trading remains quiet.

Philadelphia—Hot strip continues 1.65c, Pittsburgh, on 6 to 24-inch widths and 1.75c up to 6 inches. Large buyers are able to obtain lower prices. In widths over 24 inches hot strip is 1.80c, Pittsburgh, on heavy gages and 1.95c on light gages, plus blue annealed extras. Cold strip is firm at 2.35c, Pittsburgh.

Pittsburgh — Strip producers recorded a fair increase in bookings during September despite poor demand from automotive consumers. Requirements of most buyers have expanded moderately for several weeks but little increase is looked for in automotive tonnage. Contracting is more active with fourth quarter tonnage usually being accepted on the basis of old prices. These figures, in a number of cases, were 1.60c and 1.70c for hot strip, compared with the general market of 1.65c and 1.75c. The minimum on cold-rolled strip usually is 2.35c, with 2.45c going on some tonnage.

Cleveland—Hot strip shows slight improvement but cold strip tonnage continues low. Stamping plant orders are few because of poor automotive demand. Prices below 1.60c and 1.70c, base, Pittsburgh, on wide and narrow hot strip respectively, appear to have disappeared. On undesirable tonnages mills now quote $1 or more higher. Cold is quoted 2.35c to 2.45c, Cleveland, with little prompt tonnage being closed and few contracts for fourth quarter.

Youngstown, O.—Stripmakers report a slight increase in interest on the part of consumers. Specifications, however, have gained little. Motor car builders remain virtually out of the market. The desire of some purchasers to cover their needs at present prices is indicative of a strengthening price situation. The price remains the same, 1.65c and 1.75c, base, Pittsburgh, with no deviations reported.

Warehouse Centers Conflict in Month's Sales Reports

Warehouse Prices, Page 115

New York—Buying out of warehouse this month has proved disappointing to most jobbers. The gain over August has been small. Prices on bolts and nuts are 65 and 10 off, but the generally listed price is 65, and structural rivets are 4.25c, a reduction of a quarter cent, with some shading under 4.25c. Nails are $2.75 a keg, with substantial orders going for less.

Boston—From the fairly large number of odd projects being carried out warehouse interests continue on a satisfactory delivery position.

Philadelphia — Prices are unchanged by jobbers and business is showing little improvement from the rate of the past weeks.

Pittsburgh—Sales lack improvement. Heavy products are in steady demand, with sheets slightly less active than earlier in the month.

Buffalo—Warehouses report a slightly improved aspect in general business though purchases continue in small volume and are without particular feature. Mills still are after small lots and third-quarter business will run well below that of the corresponding period of 1929.

Detroit—Warehouse business in September about maintains the levels of August and July, and was considerably below May, which was the high point of the year. Practically no requirements are coming out of automobile plants. Building also shows a slackening.

Cincinnati—Warehouse sales are seasonally slow, but tonnage for September will show an improvement over the preceding month. Prices are sustained.

Chicago—Warehouse orders continue to increase in number as well as individual volume. Carload orders are becoming more frequent, Quotations for nails from warehouse are irregular.

St. Louis—Further moderate increase in demand from the general manufacturing trade is reported.

Cleveland—Orders for warehouse material continue in the relatively light but steady volume of the past weeks. Some quarters report a slight upturn in demand for hot-rolled steel bar stock.

Operations at Recent Rate as September Closes

Youngstown, O. — Independent steel production is about 50 per cent and that of the Corporation at 55 per cent. Irregular mill operations continue to characterize schedules.

Of the 120 independent sheet mills about 50 will operate during the week, with schedules irregular. Strip mill output is about 55 per cent. Tin plate output is 60, bar production 55 and pipe mill output is about 60.

Philadelphia—Eastern plate mills run from 40 to 60 per cent capacity, averaging 50 to 55 per cent. Sheet production has improved slightly from 65 to 85 and shape production is 50 to 65 per cent.

Pittsburgh—Ingot output holds about 55 per cent. Sheet schedules are unchanged at 50 but tin plate is lower at 70. Strip output is higher at 40 to 50 with pipe continuing at 50 to 65.

Buffalo—Operations are holding at the 53 per cent rate established two weeks ago. This will be the rate of early October production.

Cleveland—For the third successive week the 50 per cent ingot rate continues. Seventeen of 34 open hearths are scheduled to pour for the week. Each producer is unchanged.

Chicago—Operations are 55 to 57 per cent, based on the current ingot rate. Finishing mills show little change except that plate activity has been reduced a few points. Fifteen of the 36 steelworks blast furnaces in the district are active.

Birmingham, Ala.—Five open-hearth furnaces at Fairfield, Ala., and three at Gadsden Ala., are producing. Sheet and plate mills are going fairly well. Other mills are easing down. Estimate for week is that operation in steel manufacture and fabrication is around 48 per cent. No intimation is given as to resumption of Ensley works, Tennessee Coal, Iron & Railroad Co.

Concrete Awards

(*Concluded from Page 97*)

plaza, New Jersey, to Truscon Steel Co., Newark, N. J.; George M. Brewster & Son Inc., Bogota, N. J., general contractor.

950 tons, road work, Hackensack-Arcola route, New Jersey, to Buffalo Steel Co., Tonawanda, N. Y., through the Brewster Co.

700 tons, Extensible building, Washington, to American Steel Engineering Co., Philadelphia.

500 tons, Maline creek sewer, St. Louis, to Missouri Rolling Mill Co., St. Louis.

410 tons, grade separation work at La Grange, Ill., 300 tons to Olney J. Dean Co., Chicago, and 110 tons, to Concrete Steel Co., Chicago.

300 tons, theater, South Broadway, Los Angeles, to unstated interest.

210 tons, store, 610 South Hill street, Los Angeles, to unstated interest.

200 tons, hospital, San Bernardino, Calif., to unstated interest.

200 tons, building, Western Union Telegraph Co., Boston, to Concrete Steel Co., New York.

200 tons, Roosevelt boulevard sewer, Philadelphia, to American Steel Engineering Co., Philadelphia.

140 tons, road work in Peoria county, Illinois, to Concrete Steel Co., Chicago.

112 tons, law building, University of Maryland, to Concrete Steel Co., Baltimore, approximately 70 tons of structurals to Baltimore Steel Co.; Consolidated Engineering Co., Baltimore, general contractor.

100 tons, school auditorium, Long Beach; Calif., to unstated interest.

100 tons, power house on West Eleventh street, Los Angeles, to unstated interest.

100 tons, hospital, Hillsdale, N. J., to Kalman Steel Co., Chicago.

100 tons or more, bridge over Lint Slough, Oregon, for bureau of roads, to O. N. Pierce, Portland, Oreg.

100 tons or more, bridges for state highway near Tillamook, Oreg., to Clackamas Construction Co., Tillamook.

100 tons, addition to Senn high school, Chicago, to Concrete Engineering Co., Chicago.

100 tons, factory, Cornell & Underhill, Hoboken, N. J., to Joseph T. Ryerson Son Inc., New York; Bonanno Bros., general contractors.

100 tons, cattle shed, Pennsylvania railroad, Philadelphia, to American Steel Engineering Co., Philadelphia.

100 tons, courthouse, Pottsville, Pa. to American Steel Engineering Co., Philadelphia.

100 tons, Cleveland Clinic hospital, Cleveland, to Paterson-Leitch Co., Cleveland.

Contracts Pending

1100 tons, subway, route 108, section 6, Queens, N. Y.; bids Oct. 14, revised from proposal on which bids were taken in April and rejected.

400 tons, Mills building, San Francisco; bids Oct. 9.

301 tons, Atlantic avenue bridge, Los Angeles; general contract to Oberg Bros., Los Angeles.

200 tons, Illinois department of public works and buildings, general contracts amounting to $1,653,039, to be added to 1930 quota, providing emergency employment in drought areas.

150 tons, building, Fish Furniture Co., Lawrence and Christian avenue, Chicago.

150 tons, sea wall at Shedd aquarium, Grant park, Chicago.

140 tons, bridge on Flagstaff highway, Phoenix, Ariz.; bids Oct. 15.

138 tons, Little Dalton Wash drain, Los Angeles; Los Angeles Iron & Steel Co. low.

134 tons, two bridges over Crandall Slough, Oakland, Calif.; bids received.

100 tons, bridge, White Plains, N. Y.; Westchester County Park commission; bids in.

Unstated tonnage, 100 combination hotel service and restaurant units for National Autohaven Co., in Chicago district.

Unstated tonnage, $3,000,000 nurses' home and training school for St. Luke's hospital, Chicago; Schmidt, Garden & Erikson, architects.

New Owners for Georgia Manganese & Iron Co.

New York—Arrangements have been made for the purchase at foreclosure of the manganese ore properties of the Georgia Manganese & Iron Co. by Palmer & Co. and E. J. Lavino & Co., both of Philadelphia, and the Brunswick Terminal & Railway Securities Co., New York. Foreclosure proceedings have been instituted and judgment is expected within 60 days. A new company will be formed and about $1,500,000 new capital will be put into the property. The properties contain ore which averages about 25 per cent manganese in the natural state, and this is concentrated to about 48 per cent.

Iron Ore Season To Close Earlier Than Usual

Cleveland—Producers of Lake Superior iron ore anticipate an early closing of the shipping season, if consumers can be induced to anticipate their requirements. The consumption of ore decreased in August. Stocks at lower lake ports and furnaces Sept. 1 were only 2,107,066 tons larger than on the same day last year as shown by the Lake Superior Iron Ore association:

	Tons
Ore consumed in July	3,837,567
Ore consumed in August	3,673,161
Decrease in August	164,406
Ore consumed in August, 1929	5,779,137
Ore on hand at furnaces Sept. 1, 1930	29,397,236
Ore on Lake Erie docks Sept. 1, 1930	5,540,776
Total at furnaces and Lake Erie docks Sept. 1, 1930	34,938,012
Total Sept. 1, 1929	32,830,946

Rate Reduction Delayed

Washington — Reduced freight rates on interstate shipments of scrap in Texas, Louisiana, Arkansas and Oklahoma, originally ordered effective Oct. 10, will not become effective until Dec. 10.

Pipe

7577 Tons Up in California—Detroit Divides 3100-ton Order Two Ways—Small Orders Fair

PIPE PRICES, PAGE 115

New York—Cast pipe inquiry and demand is limited to numerous small tonnages. Prices are firm, $36 to $37, eastern foundry, prevailing. Yonkers, N. Y., placed 300 tons with Donaldson Iron Co. Foundry backlogs are down. New York city yard stocks are low and heavy laying contracts have resulted in calls for delivery. Brooklyn Union Gas Co. asks for 450 tons in small sizes.

Boston—Private pipe orders continue good. Municipal lettings are few. Prices continue firm. Fort Fairfield, Me., awarded 150 tons to Donaldson Iron Co. Last week's award of 118 tons of pipe and fittings by Onset fire district has been cancelled and all bids withdrawn.

Pittsburgh — Pipe business is steady but quiet. Some makers note slight improvement in standard pipe but tonnage is seasonally light. Little new business is noted in line pipe. The prospects are that considerable tonnage will be carried over until 1931. Demand for mechanical tubing, locomotive and boiler tubes lacks improvement. Mill operations continue at 50 to 65 per cent.

Cleveland—Pipe orders from jobbers are growing scarcer. An occasional order is placed for 50 to 250 tons for a building such as board of education headquarters building, which went to a northern Ohio interest, or the Cleveland Clinic hospital, which still is pending.

Chicago—Private cast pressure pipe orders are numerous. Tonnage has dropped, however, many less-carload orders being booked through contractors and occasional carloads. Fresh public lettings are light. Glamorgan Pipe & Foundry Co. is low on 1000 tons for Milwaukee, bids having ranged at $36 to $37, base, Birmingham. Detroit awarded 3100 tons.

Birmingham, Ala. — Cast pipe shops continue heavy production and

KOOLSTACK

Sends An Important Message To Furnace Manufacturers

OIL heat demands a heating system especially designed for fuel oil, say the makers of Koolstack Oil Heat System. Therefore, they have provided a specially designed unit in which the boiler has been built for the burner and the burner built for the boiler—an efficient and harmonious unit.

And fortunately they seem to have found a steel peculiarly well adapted to their requirements. Other furnace manufacturers will be interested in this excerpt of a letter from the makers of Koolstack.

> "We purchase from the Granite City Steel Co., all of the boiler plates for our boilers as well as steel jackets surrounding the boiler. Also steel for our furnaces complete which are built of steel electrically welded throughout. We are highly pleased with Granite City products. The steel not only represents good workmanship, but the finish is such that we get a uniform job of painting without unnecessary preliminary labor which is so expensive when using steel which is not so uniform."

Chicago · Dallas
Kansas City
Los Angeles
Memphis

SINCE
GRANITE CITY STEEL
1878

St. Louis · St. Paul
Seattle
San Francisco
Salt Lake City

Courtesy of Leader Boiler and Heater Co., Chicago Illinois

GRANITE CITY STEEL CO. GRANITE CITY ILLINOIS

Galvanized. Blue Annealed and Black Sheets - Plates and Tin Plate

shipments are steady but the market is spotty. Makers believe the recent drought will hasten water works development. Pending contracts for cast pipe mainly in the West still call for much tonnage. It is generally believed that the last half of 1930 will show improvement over first half. No change is reported in base price, $38 for less than car load and $37 for car lots, 6-inch and larger.

Contracts Placed

3100 tons, 8-inch cast pipe for Detroit, to Lynchburg Foundry Co., Lynchburg, Va., and Central Foundry Co., Atlanta, Ga., on linear basis.

950 tons, 6, 8, 10 and 12-inch cast pipe, class 150, for Grants Pass, Oreg., to Pacific States Cast Iron Pipe Co., Provo, Utah.

300 tons, 8-inch cast pipe for Yonkers, N. Y., to Donaldson Iron Co., Emaus, Pa.

250 tons, 16-inch cast pipe, class 100, for Grants Pass, Oreg., to United States Pipe & Foundry Co., East Burlington, N. J., through H. G. Purcell, Seattle.

150 tons, 8-inch cast pipe for Fort Fairfield, Me., to Donaldson Iron Co., Emaus, Pa.

100 tons, 6 and 8-inch, including 75 tons for Poulsbo, Wash., to United States Pipe & Foundry Co., East Burlington, N. J., through H. G. Purcell, Seattle.

Contracts Pending

3008 tons, 16 to 24-inch class 150, for Los Angeles; bids opened.

2216 tons, 4 to 12-inch class B for Long Beach, Calif.; bids opened.

2022 tons, 4 to 8-inch class B, 150 to 250, East Bay Municipal Utility District, Oakland, Calif.; C. G. Claussen & Co. low.

1000 tons, 16-inch class C plain cast pipe for Milwaukee; Glamorgan Pipe & Foundry Co., Lynchburg, Va., low at $44.40 per ton, cash discount 2 per cent, delivered. Other bidders, United States Pipe & Foundry Co., $45.10; American Cast Pipe Co., $45.40; James B. Clow & Sons, $45.65; Lynchburg Foundry Co., $45.90; and R. D. Wood & Co., $47.33; all 2 per cent discount for cash.

450 tons, 6 and 8-inch cast pipe, for Brooklyn Union Gas Co., Brooklyn, N. Y.

331 tons, 6 to 12-inch class 150, for Fullerton, Calif.; bids Oct. 7.

118 tons, Onset fire district, Massachusetts, with special fittings; all bids withdrawn and contract placed with R. D. Wood & Co., Florence, N. J., last week cancelled.

110 tons, cast water pipe, various sizes, for Panama canal zone; United States Pipe & Foundry Co., East Burlington, N. J., low; American Cast Iron Pipe Co., low on fittings.

Unstated tonnage, 11,000 feet, cast soil pipe for Panama; Rudisill Soil Pipe Co., Anniston, Ala., low.

Unstated tonnage, 4000 feet, 10-inch cast pipe for prison colony, Norfolk, Mass.

Unstated tonnage, 1110 feet water pipe, various sizes, White Plains, N. Y.; bids in.

Unstated tonnage, 20,000 feet, 4, 6 and 8-inch cast pipe for Williams Bay, Wis.

Wire

Fair Gains in September with Further Increase Indicated—Low Nail Price Being Met

WIRE PRICES, PAGE 93

Chicago—Western wire mills are completing September with fair gains over August and July. Upturn in merchant production is indicated for October because of the improved feeling in several agricultural sections. The drought apparently has stimulated sales of barbed wire. Western mill operations remain at 40 to 50 per cent. Western mills, following the reduced prices announced in the East on wire nails, are quoting $2.05 to $2.10, Chicago or western mills, for jobbing lots. As the price announcements included some advances, galvanized wire is being quoted at 2.65c to 2.70c, Chicago or western mills. Annealed fence wire is down $1 a ton to 2.20c to 2.30c. Galvanized barbed wire is quoted 2.85c to 2.95c.

New York—Nails are being quoted at $1.95 to $2, Pittsburgh. Most sellers are endeavoring to obtain $2 a keg, but are forced to meet the inside figure frequently. Some tonnage has been sold to jobbers here as low as $1.90, but this price is exceptional. Low prices on domestic nails have discouraged foreign importations, few shipments from abroad being noted. Bright wire is unchanged at 2.30c, Pittsburgh, with demand light.

Worcester, Mass.—September will probably show a slight gain in production over August even though the market basically is in no better position than for several months. Except for some orders to replenish stocks, the general situation has remained unchanged on a production basis of about 50 per cent. Quotation on plain bright wire to dealers is 2.40c, base, Worcester.

Philadelphia—Steel wire demand shows an increase of several per cent this month compared with August. The price is firm at 2.30c, Pittsburgh, and fourth quarter contracts are on this basis. Nails are $2 a keg, Pittsburgh, but this figure is occasionally shaded.

Cleveland—Wire products tonnage has shown a tendency to improve during the past two weeks. Manufacturers' wire orders mainly are responsible, jobber orders being at a minimum. Wire is quoted firmly at 2.30c, Cleveland, and nails, because of competitive conditions, at $1.95 to $2.05, Cleveland, some refusing to go below $2. Some outside mills claim that $2.20, Cleveland, would mean a loss.

Pittsburgh—Steady improvement continues in demand for wire products. Manufacturer's wire consumption expanded during the past month although automotive needs showed only a slight gain. Jobbers have been adding moderately to stocks. Agricultural demand has been growing slowly but it is believed that effects of the recent drought were considerably overestimated. Producers are taking a firm stand on current prices of $2 a keg to jobbers for wire nails and 2.30c for plain wire.

Bolt, Nut Specifications In Steady Volume

Bolt, Nut, Rivet Prices, Page 93

Pittsburgh—Specifications for bolts, nuts and rivets show little change from the volume of early September. Fabricators are steady buyers of rivets but railroads are specifying in light volume. Jobbers are taking only small lots. Fourth quarter contracting is practically complete. Prices continue 73 off for bolts and nuts and 2.75c for large rivets.

New York—Bolt and nut manufacturers report a slight gain for September. Eastern mills continue to operate about 45 to 50 per cent. Prices on bolts and nuts are unchanged at 73 off and rivets at 2.75c, Pittsburgh.

Philadephia—Bolt, nut and rivet contracts generally have been renewed through fourth quarter at 73 off for bolt and nuts and 2.75c, Pittsburgh, for rivets. Rivets are being shaded occasionally.

Cleveland—Nut and bolt orders are fair. Small amounts are being ordered from time to time and while there has been some contracting for fourth quarter at 73 off, it is more or less indifferent. Some rivet contracts were closed at the third quarter price, which had settled to 2.75c, Cleveland.

Chicago—Fourth quarter contracts for nuts and bolts are in the hands of producers on the basis of third quarter quotations. Specifications again show moderate gains. While no marked upturn is seen, the volume of shipping orders is improving over the July-August rate. Discounts for bolts, nuts and small rivets are unchanged, and large structural rivets remain at 2.85c, Chicago.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$17.50
Pittsburgh, district fur.	18.00
Pittsburgh, delivered	18.63 to 19.13
Valley, furnace	17.50
Cleveland fur., local del.	17.50
Philadelphia, delivered	19.26 to 19.76
Virginia, furnace	17.75
Granite City, Ill., fur.	18.00 to 18.50
Buffalo, fur., local del.	18.50
Buffalo, del. Boston	21.41 to 21.91
Buff., all-rail Brooklyn	20.91
Buff., all-rail, Newark	19.28
Ala., Bir. fur., local del.	14.00
Alabama, del. Chicago	17.51 to 18.01
Alabama, del. St. Louis	17.42
Alabama, del. Cincinnati	15.69 to 16.69
Alabama, del. Cleveland	18.51
Ala., Phila., dock del.	16.75 to 17.25
Ala., Balt., dock del.	16.50 to 17.00
Alabama, New York dock	17.00
Ala., Boston dock del.	20.21
Tenn., Bir. base, local del.	14.00
Tennessee, del. Cin.	15.69 to 16.69
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	19.00
Buff., all-rail, Brooklyn	20.91 to 21.41
Buffalo, all-rail Newark	19.28 to 19.78
Buffalo, del. Boston	21.91 to 22.41
Virginia furnace	18.25
Eastern, del. Phila.	19.76 to 20.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	20.00
Eastern, del. Phila.	20.26 to 20.76

MALLEABLE

Chicago, furnace	17.50
Cleveland fur., local del.	17.50
Pittsburgh district fur.	18.50
Pittsburgh, delivered	19.13 to 19.63
Valley furnace	18.00
Buffalo fur., local del.	19.00
Eastern Penna., delivered	19.26 to 20.91
Granite City, Ill., fur.	18.00 to 18.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Eastern Penn., del.	17.75 to 18.25
Buffalo fur., local del.	18.00
Montreal, delivered	22.50
Valley furnace	17.00

BESSEMER

Valley furnace	18.00
Pittsburgh, delivered	19.76

LOW PHOS

Valley fur., standard	27.00
Philadelphia, standard	24.76 to 27.79
Furnace, copper-bearing	23.00 to 23.50

GRAY FORGE

Valley furnace	17.00
Pittsburgh district fur.	17.50
Pittsbugh, delivered	18.13 to 18.63

CHARCOAL

Lake Superior, del. Chicago	27.04

SILVERY

Jackson County, O., fur., in per cents 6—$21; 7—$21.50; 8—$22; 9—$22.50; 10—$23; 11—$24; 12—$25; 13—$27.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents 10—$25; 11—$26; 12—$27; 13—$29; 14—$31; 15—$33; 16—$35.

Coke

Prices Per Net Tons

Beehive Ovens

Connellsville furnace	$2.60
Connellsville foundry	3.50 to 4.85
New River foundry	6 00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England, del.	11.00
St. Louis, del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell. basis.	5.50
Portsmouth, O., ovens, Connell. basis	5.50
Buffalo ovens	8.00 to 8.50
Detroit, ovens	8.50
Philadelphia, del.	9.00

Iron Ore

LAKE SUPERIOR ORE

Gross Ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	11.00
North African low phosphorus	10.50
Swedish basic, 65%	9.50
Swedish low phos.	11.00
Spanish, North African basic, 50 to 60%	9.50
Newfoundland fdy., 55%	9.00
Tungsten, spot and future short ton unit, duty paid	$12.50
Chrome ore, 48% net ton c.i.f.	$21.50 to 22.50

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55%	27 to 28 cents
Indian, 48-50%	27 to 28 cents
Brazilian, 46-48%	25 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$43 00
Georgia, Alabama	40.00 to 47.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Marvland	35.00 to 38.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham, Ala.	50.00 to 51.00

MAGNESITE BRICK

Pet net ton

9 x 4½ x 2½	65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$31.00
Pittsburgh, bessemer	31.00
Youngstown	31.00
Cleveland	31.00
Philadelphia	36.30
Chicago	32.00
Forging, Chicago	37.00
Forging, Pittsburgh	36.00
Forgings, Philadelphia	41.30

SHEET BARS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00
Chicago	32.00

SLABS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00

WIRE RODS

Pittsburgh, Cleveland	$36.00
Chicago	37.00

SKELP

All grades, Pittsburgh	1.65c to 1.70c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$99.00
*Ferromanganese, del. Pittsburgh	103.79
Spiegeleisen, 19-21%, domestic fur. spot†	33.00
*Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do, less carload	88.50
Do, 75 per cent	13.00 to 15.00
Ferrochrome, 66-70 chromium, 4-6 carbon. cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.15
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	160 00
Do, one ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50

†Carloads. Differentials apply to large quantities.

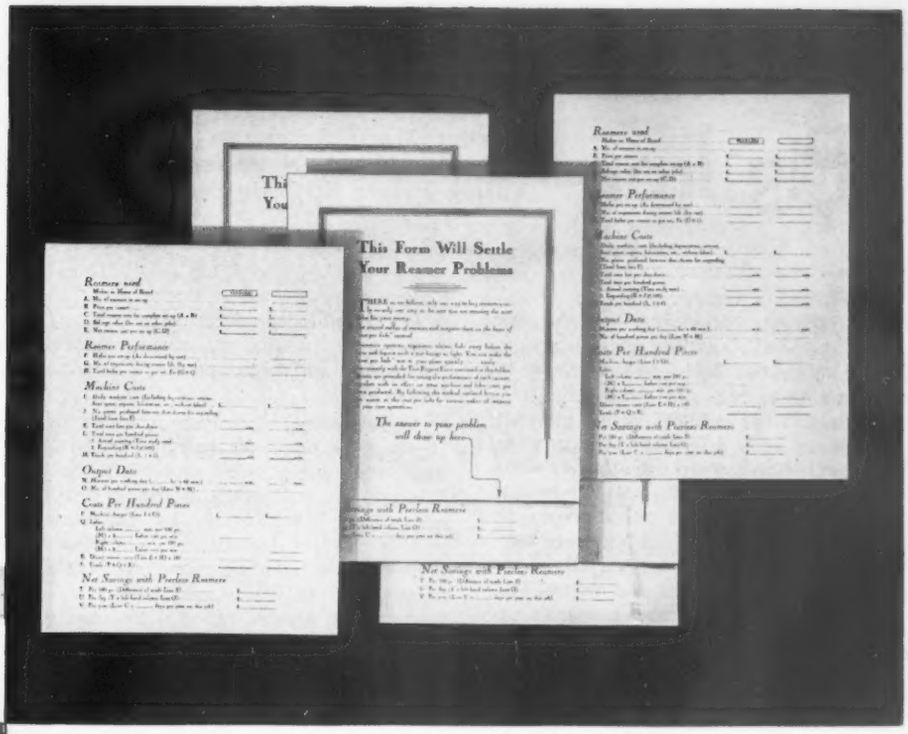
*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$17.25
Washed gravel, import duty paid east, tide, gross ton	19.50

THERE IS A *DIFFERENCE* IN REAMERS . .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Reamer Performance
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Output Data
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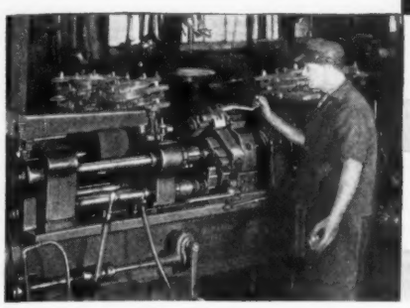

AS THESE FORMS WILL PROVE

With the coming of more efficient low cost production, the old idea that "all reamers are pretty much alike" is rapidly falling into discard.

When reamers are compared on the basis of "*cost-per-hole*" reamed, their true merits stand out clearly in cold figures that cannot be disputed.

The photograph above was snapped during a recent "cost-per-hole" test in the plant of a large manufacturer of washing machines. Before the test was made, the machine operator had been getting 2400 holes from each reamer of the ordinary solid type. But when Peerless High Speed Expansion Reamers were tried, production jumped to 12,000 holes per reamer. Figured on the basis of *cost-per-hole* reamed, Peerless proved cheaper for the job by 77%.

Peerless Reamers are manufactured by a "brazo-hardening" process that permits the joining of high speed cutting blades to bodies of tough alloy steel. When Peerless Expansion Reamers become worn, they can be expanded to original size and reground. Their total production life is thus many times that of solid type reamers.

You can prove for yourself the difference between Peerless Reamers and all others. *Try them.* Put them on the most difficult job in your shop. Record their performance. Compare their cost on the basis of number of holes reamed. Then you will know beyond all question that there is a difference in reamers.

Necessary forms will be mailed you without cost or obligation. Use the coupon below.

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☐ Without obligation, you may send us complete forms for making the "cost-per-hole" test on reamers.

☐ Also send Digest No. 84 describing details of above test.

Name _____

Company Name _____

Address _____

Pig Iron

Market More Active in Lakes and Eastern Districts—New Valley Prices Still Untested

PIG IRON PRICES, PAGE 104

Pittsburgh—New pig iron buying continues dull. A moderate improvement is noted by some makers in shipments to radiator companies, but the September movement in general registered only a negligible gain over August. Sales were off slightly during September. Producers are bringing inventories into a more favorable position with production entirely curtailed at all of the seven strictly merchant furnaces in this and valley districts. Prices still are nominal on large lots of foundry, malleable and bessemer, the 50-cent a ton reduction a week ago applying so far only on small tonnages. No further quarter inquiries are appearing, consumers buying only for a short period.

Boston—Pig iron prices are easier, No. 2X Buffalo iron being obtainable at $15.50, furnace, or 50 cents less than a week ago. Mystic Iron Works, Everett, Mass., is meeting this figure. Alabama iron is offered at $11.50, base, furnace. Sales during the week increased to 4000 tons, Mystic bookings 2800 tons. The Rhode Island Malleable Works, Hills Grove, R. I., is inquiring for 1000 tons of malleable.

New York—Another fairly active week is noted in pig iron, sales exceeding 12,000 tons. While No. 2 plain continues to be quoted generally at $16, Buffalo furnace, this price is being shaded and differentials are waived. Malleable iron, which usually takes a differential of 50 cents a ton over No. 2 plain is quoted by Buffalo furnaces at $16, furnace, for shipment outside the district, and in some instances at less. Southern iron is $17, delivered New York docks, compared with a recent spread of $17 to $17.50. The General Electric Co. has closed for more than 5000 tons of foundry iron for various plants.

Buffalo—Inquiry for pig iron is broadening and a marked increase in sales is expected in October. Six furnaces are producing iron, with 12 idle.

Philadelphia—The market shows more life; further sales of basic are in prospect, and 3000 to 4000 tons of low phosphorus iron is pending. Recent sales of foundry iron include two lots of 500 tons and numerous smaller. A Delaware river pipemaker has closed for a large tonnage of Birmingham, Ala., iron, now being shipped by rail and water at slightly less than $17 for the base grade, delivered. Eastern Pennsylvania foundry continues $18.50 to $19, at furnace nearest to consuming point, with equalizing by the more distant furnaces.

Youngstown, O.—Recent sales of pig iron in adjacent territories have had an effect on valley prices. Though no transactions of importance have been made by furnaces in this district during the past week, prices have been adjusted to levels established in other markets. No. 2 foundry is quoted at $17.50, basic at $17, and bessemer and malleable at $18. The stack of the Sharon Steel Hoop Co. at Lowellville, O., has been blown out for relining. Of the 35 blast furnaces in the district only 13 are in operation the lowest number in many years.

Cleveland—Shipments of pig iron by one merchant interest serving the western Ohio, Indiana and lower Michigan territory were 20 per cent larger in September than in August, while those by another interest were 5 per cent lower than in August. In other directions also irregularities are shown in shipments, and the current market is spotty, some sellers going far out of their usual territory booking substantial tonnages. The aggregate of sales for furnace interests with headquarters in Cleveland was 14,500 tons in the past week, less than in the week preceding. The market shows little change. Lake furnaces continue booking orders at $16.50 to $17.25, base, depending on point of delivery, while the Cleveland furnaces hold to $17.50, delivered in the local switching area.

Chicago—Forward buying of pig iron has increased. September was the best sales month since May and furnaces have their fourth quarter output nearly sold on the basis of the present 65 per cent merchant operations. Western Michigan makers of domestic furnaces have almost normal schedules and have been active buyers of pig iron. About 1000 tons of 2 per cent silicon and also some 2.50 per cent silicon, low phosphorus iron was sold in this district in the past week. It is understood the silicon differentials were waived. A northern Illinois melter purchased 700 tons of 3 per cent silicon southern iron at $18.01, delivered, on a freight rate of $6.01, a concession having been made for silicon units. Other sellers are asking $12, base, Alabama furnace. Northern iron is reported firm at $17.50. Eastern iron on docks here also is held at that figure.

Cincinnati—Little interest has developed in fourth quarter requirements for pig iron. Sales during the past week totaled 3400 tons, including one lot of 1000 tons of southern iron for a southern Ohio melter, at $12.75, base, Birmingham. Other southern iron sold at $12.

St. Louis—Purchasing of pig iron in the past week has been in larger volume than in several months. Sales totaled 6000 tons, divided between northern and southern furnaces. A tractor builder in this district placed 2000 tons with the St. Louis Gas & Coke Corp. Inquiries also have increased in number and tonnage. Price uncertainty continues. Several small lots of southern iron were reported booked at $11.50, base, furnace, although a Birmingham maker refused a substantial order at less than $12. Northern furnace prices are fairly steady.

Birmingham, Ala.—While two furnace companies report September shipments exceeded their output, surplus stocks in this district have increased. Sales for delivery in the fourth quarter do not extend beyond the first month. A few orders have been booked for delivery outside this district. Prices are unchanged.

Toronto, Ont.—Demand for merchant pig iron has improved, both in the spot and contract markets.

Ferromanganese Shipments Are Improving Slowly

Ferroalloy Prices, Page 104

New York—Domestic spiegeleisen, 19 to 21 per cent, is unchanged at $33, furnace, subject to differentials. Ferromanganese is steady at $99, duty paid, for lots of carloads to 500 tons annually. Specifications are slightly better on special alloys but whether the gain will hold is uncertain.

Pittsburgh — Ferromanganese shipments reflect continued quietness in steelmaking operations, with only a moderate increase noted since recently. Spot buying also remains dull, the market continuing $103.79, delivered. Activity in spiegeleisen approximates that of ferromanganese, the price being $33 for small lots. Demand for other ferroalloys is quiet. Ferrotungsten is dull in new business, with the price fairly steady around $1.15.

United Kingdom buys 7 per cent of its textile machinery in the United States.

Scrap

Small Change in Conditions as Market Marks Time—Tonnage Sales Practically Absent

Chicago—No definite turn is discernible in the iron and steel scrap market here. September dealer billings gained over August. While recent tight shipping restrictions have been slackened by some melters, others are limiting movement even farther. One steelworks, now receiving shipments of 20 carloads of melting steel daily, is laying down about half its receipts. Dealer operations are virtually at a standstill, as difficulty is experienced in selling on either side of the market. Dealers have been seeking outside markets for cast borings. Another small tonnage sale of heavy melting steel was made at $12.50, delivered, and the range continues at $12.25 to $12.50, Chicago switching district.

Boston—About the only materials coming to scrap dealers recently are

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

HEAVY MELTING STEEL

Birmingham	10.50 to 12.00
Boston, dealers	8.50 to 9.00
Buffalo, No. 1	12.50 to 13.00
Buffalo, No. 2	11.50 to 12.00
Chicago	12.25 to 12.50
Cinci., deal.	11.00 to 11.50
Cleve., No. 1	11.75 to 12.25
Cleve., No. 2	11.00 to 11.50
Det., No. 1 deal	11.25 to 11.75
Det., No. 2 deal	9.50 to 10.00
E. Pa. del. mill	12.50 to 13.00
N. Y. del. R. R.	9.00 to 10.00
N. Y. deal. No. 2	6.25 to 6.75
N. Y., deal. yd.	6.00 to 6.50
Pitts. No. 1	15.50 to 16.00
St. L. No. 1 sel	11.50 to 12.00
Federal, Ill.	11.75 to 12.25
Granite C., Ill.	10.00 to 10.25
Valleys, No. 1	15.00 to 15.50

COMPRESSED SHEETS

Buffalo, dealers	11.25 to 11.50
Chicago	10.25 to 10.75
Cleveland	11.50
Detroit, dealers	11.25 to 11.75
E. Pa. new mat	11.50
Pittsburgh	14.75 to 15.25
Valleys	14.50 to 15.00

BUNDLED SHEETS

Buffalo	9.00 to 9.50
Cinci., deal.	9.50 to 10.00
Cleveland	9.00 to 9.25
Eastern Pa.	9.50 to 10.00
Pittsburgh	13.00 to 13.50
St. Louis	6.50 to 7.00

SHEET CLIPPINGS LOOSE

Chicago	7.50 to 8.00
Cincinnati	7.50 to 8.00
Detroit, dealers	8.00 to 8.50
St. Louis	6.50 to 7.00

STEEL RAILS SHORT

Birmingham	12.00 to 12.50
Boston, dealers	7.50 to 9.00
Buffalo	16.00 to 16.50
Chicago (3 ft.)	13.50 to 14.00
Chicago (2 ft.)	14.25 to 14.75
Cinci., deal.	16.00 to 16.50
Detroit, deal.	15.00 to 15.50
Pitts. (open-hearth, 3 ft. and less)	17.50 to 18.00
St. Louis	14.50 to 15.00

STOVE PLATE

Birmingham	9.00 to 10.00
Boston, con.	8.00 to 8.50
Buffalo	10.25 to 10.50
Chicago, net	9.50 to 10.00
Cinci., deal. net	5.75 to 6.25
Det., net, deal	9.00 to 9.50
Eastern Pa.	10.00
N. Y., deal. mill	6.00
St. Louis	9.00 to 9.50

COUPLERS, SPRINGS

Buffalo	15.50 to 16.00
Chicago	13.50 to 14.00
Eastern Pa.	17.00 to 17.50
Pittsburgh	17.50 to 18.00
St. Louis	12.50 to 13.00

ANGLE BARS—STEEL

Chicago	13.00 to 13.50
St. Louis	12.00 to 12.50

LOW PHOSPHORUS

Buf., billets and bloom crops	16.50 to 17.00
Cleveland bil. and bloom crops	17.50
Eastern Pa.	17.50 to 18.00
Pitts. billet and bloom crops	20.00 to 21.00
Pitts. sheet bar crops	18.00 to 18.50

FROGS, SWITCHES

Chicago	13.00 to 13.50
St. Louis	12.75 to 13.25

SHOVELING STEEL

Chicago	12.25 to 12.50
Cleveland	8.00 to 8.50
St. Louis	11.25 to 11.50

RAILROAD WROUGHT

Birmingham	9.50 to 10.00
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	10.00 to 10.50
Buffalo, No. 2	13.50 to 14.00
Chicago, No. 1	11.25 to 11.75
Chicago No. 2	12.25 to 12.50
Cinti., No. 2	11.00 to 11.50
Eastern Pa.	14.00 to 14.50
N. Y., No. 1 di	10.00 to 10.50
Pitts. No. 2	15.50 to 16.00
St. Louis, No. 1	9.00 to 9.50
St. Louis, No. 2	11.00 to 11.50

SPECIFICATION PIPE

Boston	7.00 to 7.25
Eastern Pa.	12.00 to 12.50
N. Y., deal.	7.25 to 7.50

BUSHELING

Buffalo, No. 1	11.25 to 12.50
Chicago, No. 1	9.50 to 10.00
Cinn., No. 1 dl	9.25 to 9.75
Cinn., No. 2	6.00 to 6.50
Cleve., No. 2	7.00 to 7.50
Detroit, No. 1 new deal	9.50 to 10.00
St. L. No. 1	8.00 to 8.50
Val. new No. 1	13.75 to 14.25

MACHINE TURNINGS

Birmingham	7.50 to 8.50
Boston, dealers	3.75 to 4.00
Buffalo	8.50 to 9.00
Chicago	6.25 to 6.75
Cinn., deal.	6.25 to 6.75
Cleveland	6.50 to 7.00
Detroit	5.75 to 6.25
Eastern Pa.	9.00
N. Y., deal.	5.00 to 5.50
Pittsburgh	8.00 to 8.50
St. Louis	6.00 to 6.50
Valleys	10.50 to 11.00

BORINGS AND TURNINGS
For Blast Furnace Use

Boston, chem.	9.00 to 9.25
Buffalo	9.00 to 9.50
Cinn., deal.	6.50 to 7.00
Cleveland	7.50 to 8.00
Detroit, deal	5.75 to 6.00
Eastern Pa.	7.00 to 8.50
N. Y., deal.	4.00
Pittsburgh	9.00

CAST IRON BORINGS

Birming., chem.	12.00 to 13.00
Birming., plain	7.50 to 8.50
Boston, chem.	9.00 to 9.50
Boston, deal.	3.10 to 3.60
Buffalo	9.00 to 9.50
Chicago	7.50 to 8.00
Cinn., deal.	6.50 to 7.00
Cleveland	7.50 to 8.00
Detroit, deal	5.75 to 6.25
Eastern Pa.	8.50 to 9.00
E. Pa. chem.	14.00 to 14.50
N. Y., deal.	4.50
Pittsburgh	9.00
St. Louis	5.50 to 6.00

PIPE AND FLUES

Cinn., deal	8.00 to 8.50

RAILROAD GRATE BARS

Buffalo	9.25 to 9.75
Chicago, net	8.50 to 9.00
Cincinnati	7.00 to 7.50
Eastern Pa.	10.50
N. Y., deal.	6.50 to 7.00
St. Louis	10.00 to 10.25

FORGE FLASHINGS

Boston, deal.	7.25 to 7.60
Buffalo	11.00 to 11.50
Cleve. ov. 10 in	10.00 to 10.50
Detroit	9.75 to 10.25

FORGE SCRAP

Boston, deal.	6.00 to 6.50
Chicago	14.50 to 15.00
Eastern Pa.	11.00 to 11.50

ARCH BARS, TRANSOMS

Chicago, net	13.00 to 13.50
St. Louis	13.00 to 13.50

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	11.50 to 12.00
Chi. steelworks	9.50 to 10.00
Cleveland	11.00 to 11.50
Eastern Pa.	11.50 to 12.00
Pittsburgh	12.50 to 13.00
St. Louis	9.25 to 9.75

STEEL CAR AXLES

Birmingham	16.50 to 17.00
Bos., ship. pt.	16.50 to 17.00
Buffalo	16.00 to 16.50
Chicago	16.80 to 17.35
Eastern Pa.	21.00 to 21.50
St. Louis	16.00 to 16.50

SHAFTING

Bos., ship. pt.	14.00
Chicago	16.25 to 16.80
Eastern Pa.	18.50
N. Y., deal.	13.00 to 14.00
St. Louis	13.00 to 13.50

CAR WHEELS

Birming., iron	10.00 to 11.00
Boston, iron	14.00 to 14.50
Buffalo, iron	13.50 to 14.00
Buffalo, steel	15.00 to 15.50
Chicago, iron	13.50 to 14.00
Chi., roll steel	14.50 to 15.00
Cincinnati	12.00 to 12.50
Pitts., iron	15.00 to 15.50
Pitts., steel	17.50 to 18.00
St. Louis iron	12.00 to 12.50
St. Louis, steel	14.50 to 15.00
E. Pa. steel	16.75 to 17.00
E. Pa. iron	14.50 to 15.00

NO. 1 CAST SCRAP

Birming., cup.	11.00 to 11.50
Buffalo (mac.)	11.25 to 11.50
Boston, textile	11.00 to 11.50
Chicago, mach.	13.45 to 14.00
Chi., railroad	11.20 to 11.75
Chicago, agri.	10.90 to 11.50
Cinn., mach. cup., gross	14.50 to 15.50
Cleve. cupola	13.50 to 14.00
Det., net deal	9.00 to 9.50
E. Pa. cupola	13.50
N. Y. cup. deal	9.50 to 9.75
N. Y., del. local foundries	14.00
Pitts. cupola	13.50 to 14.50
San Fran., del.	13.50 to 14.00
Seattle	14.00 to 14.25
St. L. No. 1 ma	11.00 to 11.50
St. L. No. 1	10.00 to 10.50

HEAVY CAST

Boston	10.50 to 11.00
Bos. Mach. cast	12.50 to 13.50
Buffalo, break	8.50 to 9.00
Cleve., break	8.00 to 8.50
Detroit, auto, net deal	11.50 to 12.00
Det., break., dl.	7.00 to 7.50
Eastern Pa.	11.50 to 12.50
N. Y. No. 1 dl.	8.00 to 8.50
N. Y. break. dl.	7.75 to 8.50
Pittsburgh	11.00 to 11.50

MALLEABLE

Boston R. R.	14.00 to 14.50
Buffalo	15.00 to 15.50
Chicago, agri.	11.75 to 12.25
Chicago, R. R.	13.50 to 14.00
Cinn., R. R. dl.	12.50 to 13.00
Cinn., agri., dl.	12.50 to 13.00
Cleve., rail	15.50 to 16.00
Det. auto deal.	13.50 to 14.00
St. Louis, rail	10.00 to 10.50

RAILS FOR ROLLING
5 feet and over

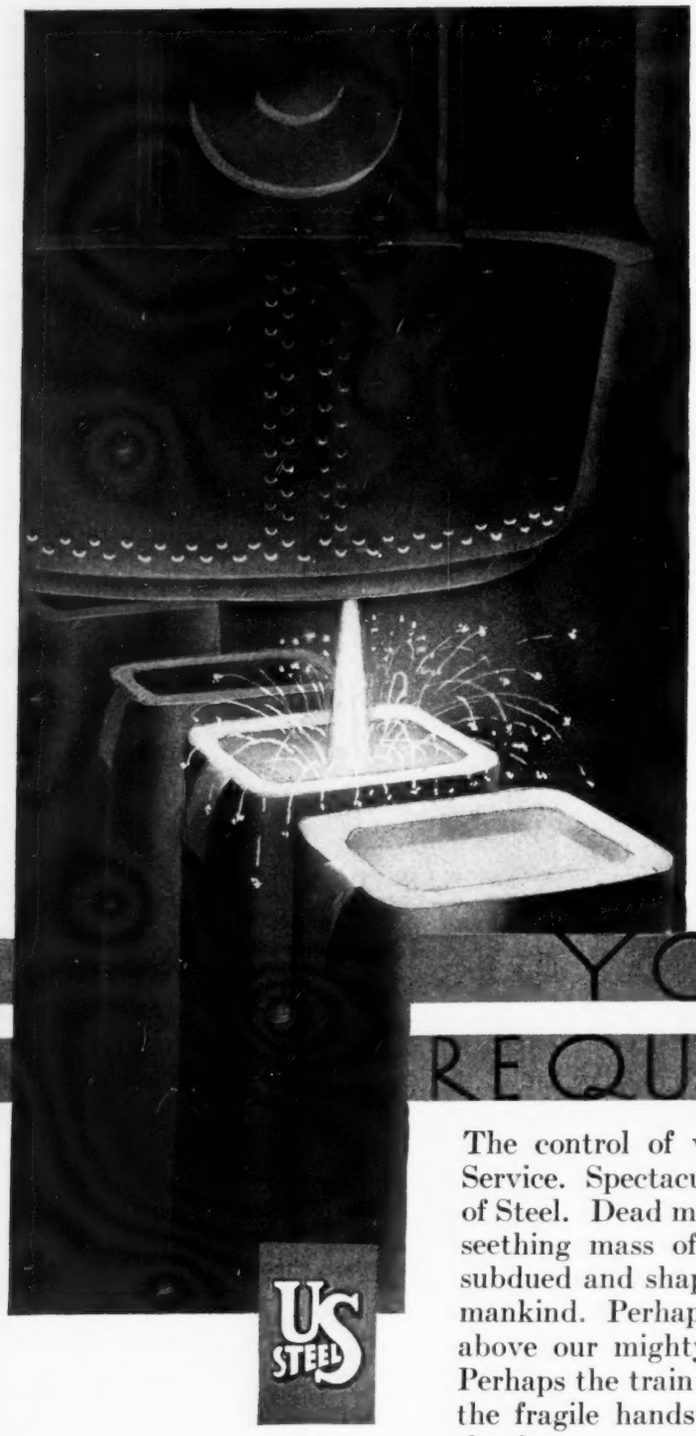
Birming. cup.	12.00 to 13.00
Boston	10.00 to 10.25
Buffalo	13.00 to 13.50
Chicago	14.50 to 15.00
Eastern Pa.	13.00 to 13.50
New York	9.50 to 10.00
St. Louis	13.50 to 14.00

LOCOMOTIVE TIRES

Chicago, cut	15.00 to 15.50
St. L. No. 1	13.00 to 13.50

LOW PHOS. PUNCHINGS

Chicago	13.00 to 13.50
Pittsburgh	17.00 to 17.50
Eastern Pa.	17.00 to 18.00
Buffalo	16.50 to 17.00



YOUR STEEL REQUIREMENTS

The control of vast, tremendous forces is Carnegie Service. Spectacular and dramatic is the manufacture of Steel. Dead masses of ore . . kindled into a furious, seething mass of white-hot metal . . . then finally subdued and shaped into ingot form—tamed, to serve mankind. Perhaps to form the skyscrapers that tower above our mighty cities—or to make a humble pin. Perhaps the train that thunders through the night—or the fragile hands of a watch to mark the progress of the day.

For nearly three quarters of a century, the name "Carnegie" has been identified with the manufacture of Steel. The knowledge accumulated during this time and the mechanical, metallurgical and engineering resources of this company are yours to summon—to meet your steel needs.

CARNEGIE STEEL COMPANY - PITTSBURGH, PA.

Subsidiary of United States Steel Corporation 92

CARNEGIE

that being disposed of for cash by sellers who probably are pressed. Generally, sellers are holding aloof and prices incline to weakness. Heavy melting steel and steel borings are easier, while the few sales made otherwise have been as a rule at the inside prices quoted.

New York—An easy tone prevails in scrap. Heavy breakable cast is lower, dealers now paying $7.75 to $8.50, New York. Fresh consuming demand continues to lag. Shipments are still being held up on yard steel for Pottsville, Pa., and on No. 1 railroad steel for Claymont, Del.

Philadelphia—Because steel operations have not been increased as much as expected steel and iron scrap is distinctly easier. Steel axles, cast borings, breakable cast and forge have sold 25 to 50 cents below recent prices. No new business has appeared in No. 1 heavy melting steel but it is believed it could be had at less than $13. No. 2 melting steel now is $10.50 to $11, delivered.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$15.00
Steel axles	13.00
Car wheels	11.00
Stove plate	10.00
Wrought pipe	5.00
Turnings	6.00
Heavy melting steel	8.00

TORONTO

Steel axles	16.00
Iron axles	12.00
Heavy melting steel	9.00
Turnings	6.50
No. 1 mach. cast (net)	11.00
Malleable (net)	9.00

Buffalo—There are persistent but unconfirmed reports that a Buffalo steelworks has purchased a tonnage of selected No. 1 heavy melting steel at $13.75. Other grades are not selling in tonnage.

Cincinnati—Movement of scrap on contracts to an important consumer have been resumed but otherwise the market remains dull with total tonnage light. Heavy melting steel is off 25 cents.

Detroit—Short shoveling turnings are off 25 cents, old No. 2 busheling 50 cents, and No. 1 machinery cast $1. Little scrap is being offered by automotive producers and the prospects are that the volume will not increase this quarter. Demand for scrap from the Youngstown and Pittsburgh districts is nominal. An important Buffalo melter, however, is taking as much out of Detroit as possible by boat before navigation closes and in a seeming reversal of its policy is utilizing dealers.

St. Louis—Steel and iron scrap is exhibiting considerable strength, notable particularly on steel grades. Supplies are growing increasingly tighter, and dealers with contracts are experiencing some difficulty in securing material for delivery.

Birmingham, Ala.—Readjustment of prices on steel and iron scrap has little significance, the market continuing dull with little scrap making.

Toronto, Ont.—New business in steel and iron scrap has reverted to a state bordering on stagnation. Sales are at a minimum, but more interest appears to be developing. Inquiries are coming out and there are favorable indications of a stronger spot and future demand within a fortnight. Prices are unchanged.

Pittsburgh—Iron and steel scrap is dull and weaker. Heavy melting is in poor demand and dealers formerly offering up to $15.50 are now able to buy at $15. The last mill price was $16 but the Pennsylvania railroad list closing this week is expected to give some indication of the price trend. Compressed sheets are offered more freely at $15.25 compared with recent mill purchases of $15.50. Specialty grades are steady with blast furnace material quiet. Cupola cast is easier.

Arguments in Merger Case To Begin Oct. 20

Oral arguments in the Bethlehem Sheet & Tube merger case will begin Oct. 20, at Youngstown, O., Judge David G. Jenkins having set that date at the conclusion of testimony Sept. 24.

Just before adjournment the plaintiffs, who are opposing the merger, filed a supplementary amendment to the amended original petition in which they charged the Bethlehem Steel Corp. with fraud in not apprising Sheet & Tube stockholders of various facts vital to their interests.

The trial lasted 53 court days. The transcript containing the stenographic report of the testimony makes a volume of 7842 pages approximately 1,764,000 words. The number of exhibits offered by the plaintiffs aggregated 642, and by the refense 276, a total of 918. Plaintiffs called 38 witnesses, including depositions, the defense 14, and the court three.

Coke

Blast Furnaces Remain Out of Market—Foundry Demand Retains Gain

COKE PRICES, PAGE 104

Pittsburgh—Beehive coke buying is confined to small lots, with little improvement noted in tonnage during recent weeks. Furnace coke is not finding a market among blast furnaces and sales to other consumers are light. The price usually is $2.60 on small orders. Heating coke demand is slow to expand but some sales are noted at $2.50. Foundry coke continues slightly more active than a month ago. Domestic fuel activity is lagging behind the usual seasonal rate.

Beehive production in the Connellsville district in the week ended Sept. 20 was 18,440 tons, against 18,870 tons in the preceding week and 83,470 tons a year ago.

Boston—Continued warm weather is restricting demand for domestic coke, while foundries continue to take shipments on contracts as needed. Prices are firm.

New York—Sellers of foundry coke say there has been no seasonal improvement. Prices are steady.

Cincinnati—Specifications for by-product foundry coke are slightly better. Domestic grades show a normal seasonal trend.

Chicago — September by-product foundry coke shipments gained more than 10 per cent over August. Oven capacity is being increased. Prices hold at $8, ovens, and $8.75 for delivery in the Chicago switching district.

St. Louis—Moderate increase in by-product coke operations is noted, though not up to seasonal average. Shipments to foundries are fair. General demand for industrial coke is quiet.

Birmingham, Ala.—Production of coke has eased off, as requirements appear lower than at any other time in the past two or three years. Of 1390 by-product ovens in the state 975 are operating, but at a slow rate. Prices are unchanged.

Pacific Coast

Prospective Tonnages Promise for More Activity in Fall—Little Buying Being Done as Stocks Are Large—Public Improvements Afford Much Tonnage—Prices Are Unchanged

Seattle—Awards were not numerous this week but indications continue more favorable. Inquiry for structurals and reinforcing are not of important proportions but steel pipe fabricators anticipate much new work soon. Large contracts for water pipe, tanks, pulp mill equipment and other work are to be up for figures soon.

Pig Iron and Coke

Foundry operations are spotted and while conditions are improved, plants are running at less than 50 per cent of capacity. There is only limited buying of iron and coke as stocks are large. Columbia pig is unchanged in price. A small quantity of Anshan pig iron from China has recently been sold here after a long absence from this market. It is quoted at $20, delivered plant. Coke prices are steady, this market being completely supplied with coke from British sources.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Mill prices are steady, merchant bars and shapes at 2.25c, reinforcing at 2.30c and plates at a minimum of 2.15c. These levels have had no severe test as inquiry for large lots has been lacking.

Both merchant and reinforcing bars are slow, as demand is limited and no large awards have recently been made. Local mills report unchanged operations. Orders of the last week have all been in car lots or less. Clackamas Construction Co. has the contract for building six concrete bridges near Tillamook, Oreg., involving an unstated quantity of steel. O. N. Pierce, Portland, has the contract for constructing a reinforced concrete bridge for the government in Lincoln county, Oreg. Stewart & Barber, Vancouver, B. C., are building the substructure of the Pacific Great Eastern bridge over the Fraser river, B. C., calling for 30 tons of reinforcing.

Seattle will call bids within a month for a $2,000,000 improvement to the water system involving two heavy pipe lines, 48 and 66-inch diameter. Several other miscellaneous jobs involving plates are developing.

The structural branch is quiet as no awards of 100 tons were announced this week nor were any important new projects released. Several jobs are pending. Bacon & Matheson Forge Co., Seattle, booked 65 tons for buildings at Fort Lewis, and Isaacson Iron Works, Seattle, was awarded 40 tons for an addition to the Henry building, Seattle. Two important projects are pending at Vancouver, B. C., tonnages unstated. One is material for the proposed Canadian National Pier, recently destroyed by fire. Repairs to the 200-foot north span of the Second Narrows bridge, Vancouver, B. C., are estimated to cost $250,000. Part of the bridge was destroyed by a runaway vessel.

Pipe Inquiries Better

Grants Pass, Oreg., this week awarded 1200 tons of cast iron pipe in addition to hydrants, valves, etc. Rensselaer Valve Co., through E. Hallgren, Seattle, received the contract for the accessories. Pacific States Cast Iron Pipe Co., Provo, Utah, will furnish 950 tons of 6, 8, 10 and 12-inch class 150 cast iron while 250 tons of 16-inch class 100 was taken by the United States Pipe & Foundry Co., through Hugh G. Purcell, Seattle.

More Bids Are Asked

San Francisco—(*By Air Mail*)—While sales were not particularly heavy this week, improvement is reported in the number of new projects coming out for figures. Featuring the new inquiries of the week were 2400 tons for the new Mills building in San Francisco, bids on which will be opened Oct. 9. Prices remain unchanged and quotations are holding fairly firmly to established levels.

Bars, Plates and Shapes.

Awards of concrete bars totaled 1384 tons, bringing the aggregate for the year 49,571 tons, compared with 63,103 tons for the corresponding period last year. Awards reported were all placed with unknown interests. Included among these were 300 tons for a theatre on South Broadway, Los Angeles, 200 tons for a hospital in San Bernardino and 100 tons for a school auditorium in Long Beach. Bids were opened on 134 tons for two bridges in Oakland. The Los Angeles Iron & Steel Co.. was low bidder on 138 tons for the Little Dalton Wash storm drain, Los Angeles.

McClintic-Marshall Co. secured 270 tons of structural shapes for an apartment on Vallejo street, San Francisco. A rock crushing plant in Livermore, Calif., involving 176 tons, was placed with the Western Iron Works. The Pacific Iron & Steel Co. took 125 tons for a school auditorium in Long Beach. Bids were opened on 205 tons for a bridge at Seligman, Ariz. Oberg Bros. secured the general contract involving 560 tons for the Atlantic Avenue bridge, Los Angeles. Bids will be opened Oct. 15 for 300 tons for a bridge in Arizona. Plain material ranges from 2.15c to 2.25c, c.i.f.

Other Finished Material

Cast iron pipe awards were confined to lots of less than 100 tons. Several fair sized projects were opened. C. G. Claussen & Co. was low bidder on 2022 tons for the East Bay municipal utility district, Oakland. Los Angeles has opened bids on 3008 tons and Long Beach has opened bids on 2216 tons. The only new inquiry of importance involves 331 tons for Fullerton, Calif. Little improvement is noted in demand for oil country goods.

Cleansing Alloys Put On Production Basis

New York—Electro Metallurgical Sales Corp. now is manufacturing silica spiegeleisen on a production basis at its Canadian plant. This ferroalloy contains 7 to 8 per cent silicon and 25 to 30 per cent manganese and is used as a furnace deoxidizer in basic open-hearth steel. The combination of silicon and manganese forms a manganese silicate slag which has a low melting point and frees itself readily from the steel.

The interest also has placed in production a new calcium-manganese-silicon ferroalloy containing 18 per cent calcium, 10 per cent manganese and 60 per cent silicon. This is for a ladle addition for manufacture of super-clean steel.

Both these ferroalloys are marketed by the Electro Metallurgical Sales Corp., 30 East Forty-second street, New York.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2 points less. Wrought iron pipe, Pittsburgh base.

BUTT WELD

Steel In.	Blk.	Gal.	Iron In.	Blk.	Gal
½	58	44½	½	23	5
¼	62	50½	¾	28	11
1—3	64	52½	1 and 1¼	31	15
			1½ and 2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7 and 8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+13	+48
¾	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7 and 8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, Lap Welded Steel		f.o.b. Pittsburgh Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¼—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload. 4 points under base and two 5 per cents. Charcoal iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill

Random lengths over 5 ft.....55%
Selected lengths, 1 to 18 ft.....53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. $37.00 to 38.00
Four-inch, Birmingham 41.00 to 42.00
Four-inch, Chicago ..... 49.20 to 50.20
Six to 24-inch, Chicago 45.20 to 46.20
Six-inch and over, N. Y. 38.50 to 40.50
Four-inch, New York .... 41.50 to 42.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.10c
Chicago	2.90c
Cincinnati	3.15c
Cleveland	2.85c
Detroit	3.00c
Houston	3.00c
Los. Ang.	3.40c
New York††	3.10c
Philadelphia	2.70c
Pittsburgh	2.75c
Portland	3.15c
San Frans.	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.00c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.10c
Chicago	3.00c
Cincinnati	3.15c
Detroit	3.00c
New York††	3.10c
Philadelphia	2.70c
St. Louis	3.15c
Tulsa	3.65c

REINFOR. BARS

Baltimore	2.50c-3.31c
Boston	3.265c
Buffalo	2.95c
Chattanooga	3.10c
Cincinnati	3.15c
Cleveland	2.25c-2.44c
Detroit	3.00c
Houston	3.00c
Los Ang. cl	2.40c
Los Ang. lcl	2.70c
New York	2.65c-3.10c
Philadelphia	2.55c
Pittsburgh	2.75c
San Fran. cl	2.30c
San Fran. lcl.	2.60c
Seattle	3.15c
St. Louis	3.15c
Tulsa	3.65c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	3.40c
New York	3.10c
Philadelphia	2.60c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York	3.30c
Philadelphia	2.60c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

NO. 10 BLUE

Baltimore	3.50c
Bost. 3/16-in.	3.915c
Buffalo	3.50c
Chattanooga	3.60c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.10c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
New York	3.40c
Portland	4.00c
Phila. *†	3.15c
Pitts.**	2.75c-2.85c
San Fran.	3.80c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.95c

NO. 24 BLACK

Balt. *†	3.75c
Boston	4.70c
Buffalo	4.20c
Chicago	3.80c
Cincinnati	4.05c
Clev. ***	3.75c
Detroit	3.75c
Los Ang.	4.70c
New York	3.55c to 3.65c
Phila. *†	3.70c
Pitts.**	3.40c-3.50c
Portland	5.00c
San Fran.	4.35c
Seattle	5.00c
St. Louis	4.05c
St. Paul	3.545c
Tulsa	4.45c

NO. 24 GAL. SHEETS

Balt.*†	4.25c
Boston	5.45c
Buffalo	4.40c to 4.60c
Chicago (lc. del.)	4.35c
Chicago (outside shipment)	4.35c to 4.60c
Cincinnati	4.90c
Cleveland***..	4.35c
Detroit	4.25c
Houston	5.40c
Los Ang.	5.10c
New York	4.25c
Phila. *†	4.25c
Pitts.**	4.00c-4.10c
Portland	5.50c
San Fran.	5.00c
Seattle	5.50c
St. Louis	4.60c
St. Paul	4.23c
Tulsa	5.35c

BANDS

Baltimore	3.50c
Boston	4.015c-5.00c
Buffalo	3.50c
Chattanooga	3.30c
Chicago	3.10c
Cincinnati	3.35c
Cleveland	3.10c
Det. 3/16-in. & lighter	3.30c
Houston	3.65c
Los Ang.	4.30c
New York	3.40c
Philadelphia	3.00c
Pittsburgh	3.10c
Portland	3.50c
San Fran.	3.75c
Seattle	4.15c
St. Paul	3.75c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston	5.50c-6.00c
Buffalo	3.90c
Chicago	3.65c
Cincinnati	3.90c
Cleveland	3.65c
Det. No. 14 & lighter	3.80c
New York	3.75c
Philadelphia	3.25c
Pittsburgh	4.10c
Seattle	5.15c
St. Paul	3.70c

COLD FIN. STEEL

Rounds & Hexagons

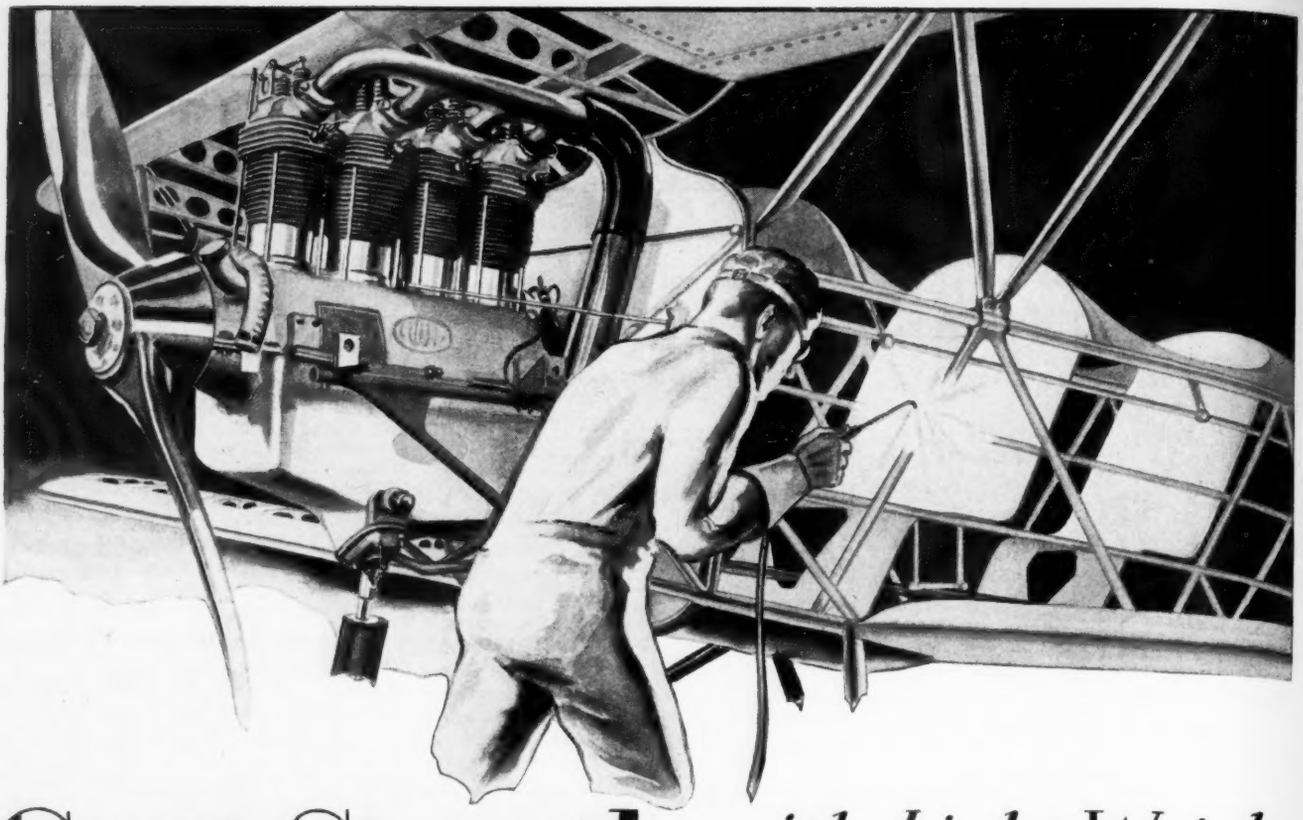
Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.85c
Chicago	3.35c
Cincinnati	3.80c
Cleveland	3.40c
Detroit	3.65c
Los Ang. (a)	4.50c
New York	3.50c
Philadelphia*	3.40c
Pittsburgh	3.35c
Portland (a)	4.50c
San. Fran.(a)	4.25c
Seattle (a)	4.75c
St. Paul (a)	3.85c
St. Louis	3.60c
Tulsa	4.75c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted.
(a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100-in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	6.15c
Cincinnati	6.10c
Clev. (b)	5.95c
Detroit	5.40c
Phila. (c)	4.85c
New York	5.05c

(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
††Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.



Great Strength *with Light Weight*

STANLEY Alloy Steels, such as Chrome Molybdenum, are being used more and more where exceptional strength must be combined with light weight.

For automobiles, airplanes — anywhere that lives depend upon strength of materials, Stanley Special Steels provide the needed strength and retain the light weight which is so necessary. Don't forget that in thousands of cases pressed steel will cut down the weight without sacrificing the strength and wearing qualities. This may apply particularly well to your products.

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STANLEY STEEL

Hot and Cold Rolled

Mill Products

Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass product prices based on 10.00c, del., Conn. for copper

Sheets	
Yellow brass (high)	17.00
Copper, hot rolled	19.87½
Lead, full sheets (cut ½c more)	9.25
Zinc sheet (100-lb. base)	9.50
Tubes and Pipes	
Seamless yellow brass (high)	21.87½
Seamless copper	22.12½
Rods	
Yellow brass (high, full turnings)	15.25
Naval brass	17.37½
Anodes	
Copper, untrimmed	17.37½
Wire	
Yellow brass (high)	17.50

Old Metals

Dealers' buying prices, cents lb.

Heavy Red Brass	
New York	7.25 to 7.50
Chicago	7.00 to 7.25
Cleveland	7.50 to 7.75
St. Louis	7.50 to 7.75
Heavy Yellow Brass	
New York	8.00 to 8.25
Heavy Copper and Wire	
New York	8.00 to 8.25
Boston	8.25 to 8.50
Chicago	8.25 to 8.50
Cleveland	7.50 to 7.75
St. Louis	7.50 to 7.75
Red Brass Borings	
New York	6.75 to 7.25
Yellow Brass Tubing	
Cleveland	5.00 to 5.25
Light Copper	
New York	7.00 to 7.25
Chicago	6.50 to 6.75
Cleveland	7.00
St. Louis	7.25 to 7.50
Light Brass	
Boston	3.75 to 4.00
Chicago	4.25 to 4.50
Cleveland	3.75 to 4.00
St. Louis	4.25 to 4.50
Zinc	
New York	2.25 to 2.50
Cleveland	1.75 to 2.00
St. Louis	2.25
Aluminum	
Clippings, soft, Cleveland	12.00 to 13.00
Clippings, hard, Cleveland	8.75 to 9.00
Borings, Cleveland	5.25 to 5.50
Cast, Cleveland	7.25 to 7.50
Cast, Boston	6.50 to 7.00
Cast, St. Louis	7.50

Secondary Metals

Remelt aluminum No. 12	14.00 to 15.00
Brass ingot, 85-5-5-5	10.25

Quicksilver Is $112-114

New York—Quicksilver is quoted at $112 to $114 a flask.

Metals

Severe Depression Rules in Market—Copper Prices Drop Off—Tin Follows London

New York—Seldom in its history has the metal market been subjected to such severe depression as at the present time. New low levels of prices in London have been reflected in part by further declines in this country. Copper and tin prices here are lower than at any previous time this year. Zinc continues weak although sellers' quotations have held remarkably steady during the past week. Lead prices also are steady despite the fact that London quotations are under parity with New York.

Copper—The general trend of the market has been one of marked weakness this week. Late Monday, custom smelters again set the pace for further price cutting by abandoning the 10.25-cent quotation for the flat level of 10.00c, delivered Connecticut. Moderate buying was done by consumers at this price. On Tuesday, producers other than the custom smelters met the lower level of prices while the official export price was reduced ½-cent to 10.30c, c.i.f. European ports. The action of exporters in cutting their official price placed the foreign consumers in a position comparable with that of domestic users. This stimulated new demand for export shipment and Tuesday morning sales alone totaled 1000 tons. New buying interest was stimulated in the domestic market. For the time being at least, the tone of the copper market appears firmer.

Tin—Dullness has continued to rule in this market while prices have followed the weakness of quotations in London. Domestic deliveries of tin during September were more than expected and amounted to 7250 tons. Stocks and landing for the month totaled 6323 tons, a cut of 1210 tons. A prediction of a decrease in the world's visible supply has failed to stimulate demand here.

Lead—Quotations have continued unchanged at the levels established at the beginning of the month. The market here, however, has been threatened with foreign metal since London weakness has brought prices there under New York parity. Scattered lots for prompt shipment have been bought by consumers.

Zinc—Weakness has failed to cause a reduction in producers' prices but some prices are nominal. Demand continues dull.

Antimony—Prices have held firm but sales have continued to lag.

Aluminum—No price changes have occurred in the virgin metal market. —*Daily Metal Trade.*

Coke By-Products Steady; Distillate Stocks Reduced

New York—Stocks of distillates are becoming short as demand continues steady, with output down to 50 per cent. This is especially true of benzol and toluol. One distributor reports September the best month in toluol in more than a year. Industrial lacquer demand has improved materially. Prices are firm. Higher quotations are predicted later this month. Most distributors now are in line with lower naphthalene prices. Some contracting at new quotations is being done. Phenol buying is spotty, although some outside inquiry is noted. Sulphate of ammonia is unchanged and buying is light.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.21
90 per cent benzol	0.21
Toluol	0.30
Solvent naphtha	0.25
Commercial xylol	0.25
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Delivered	
Sulphate of ammonia	$1.80

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
Sept. 24	10.37½	10.56¾	10.12½	29.87½	30.25	5.50	5.35	4.25	22.90	7.62½	35.00
Sept. 25	10.37½	10.56¾	10.12½	29.50	29.87½	5.50	5.35	4.25	22.90	7.62½	35.00
Sept. 26	10.37½	10.56¾	10.12½	29.00	29.37½	5.50	5.35	4.25	22.90	7.62½	35.00
Sept. 27	10.37½	10.56¾	10.12½	29.00	29.37½	5.50	5.35	4.25	22.90	7.62½	35.00
Sept. 29	10.12½	10.25	9.87½	28.70	29.00	5.50	5.35	4.25	22.90	7.62½	35.00
Sept. 30	10.00	10.12½	9.87½	28.75	29.00	5.50	5.35	4.25	22.90	7.62½	35.00

Europe

Dull Prospects Fail to Clear as Inquiry Falls Off—French Domestic Trade Fair

Birmingham, Eng.—Steel and pig iron production in Britain touched a low level in August. In drawing any conclusions from these low outputs due regard must be paid to the fact that the annual stop-week occurs in August and the custom of closing works entirely has spread rapidly in recent years.

Plans for work the coming winter are being pushed in the hope of relieving unemployment. A new bridge over the Tees is likely to be started this year, the cost to be £600,000. Tenders will be invited as soon as contract drawings are prepared. Government aid will be insured to the extent of 75 per cent.

Steelworks in all districts are short of orders. In the Birmingham district there is a scramble for specifications for structural work, but engineers have little to place. Inquiries are more hopeful but present contracts are small and not sufficient to keep Midland yards at work. Prices are cut finely, leaving little room for profit-making. In Sheffield a few awards have been received from the state for steel needed for admiralty and war office requirements. Steel disks, plates and rods have been placed with Swift, Levick & Sons Ltd., Rotherham Forge & Rolling Mills Co. Ltd., and Beardshaw & Son Ltd. A forged steel propeller and shafting has been ordered from William Jessop & Sons Ltd. The crown agents for the colonies have placed a contract for tires with J. Baker and Bessemer Ltd.

Orders Placed for Locomotive Parts

The India store department has placed orders for locomotive cylinders and other parts with the North British Locomotive Co. Ltd., Glasgow, and the Vulcan Foundry Ltd., of Newton-Le-Willows. These are intended for Indian state railways standard type locomotives. Tenders were submitted on twelve locomotitves but these contracts have gone to Germany.

Steel mills at Barrow and Workington are idle pending receipt of new business for railroad material. Hoop mills are working and the rail mills at Workington are scheduled for operation next week.

British steelmakers are maintaining prices, refusing to respond to severe price cutting from the Continent. Galvanized sheet producers have held a meeting, however, and reduced the thick gages, making the basis price of 24 gage £11 12s 6d ($56.49), a drop of 5s ($1.21). Export trade has been exceedingly slow of late and it is hoped that some business may be attracted by the revision. Another reason for the drop is the lowering of costs of production. Sheet bars are cheap and spelter prices are lower than for years. For 30-gage the price is £15 7s 6d ($74.72) and the thinner gages are unaffected by the revision.

Midland demand for pig iron has relapsed after a spurt at the beginning of the month. Furnacemen are alarmed at the heavy stocks accumulating in Northamptonshire. A furnace has been stopped and it is likely that another will go on slack blast. Specifications have almost ceased, apart from a few odd lots for immediate consumption. Foundries locally are short of work. After the holiday they were forced to come into the market but there is no disposition to place forward business. Few forges have restarted since August and sales of forge iron are negligible.

A few forward contracts for pig iron have been placed in the Middlesbrough area. Prices are firmer, owing to a stronger tendency in furnace coke. The slight expansion in buying is sufficient to absorb the small output now being made on the northeast coast. More activity is noticeable in the hematite trade. Home consumers are specifying for heavier deliveries against old contracts and some foreign business has been arranged. In the Barrow district hematite makers have sold during the past week a little more iron than has been smelted. This is the first time this has happened for many weeks, but stocks are heavy and so far there have been no heavy inroads.

Midland merchants find demand for Continental material has subsided after the rush for bargains earlier in the month. Prices are still low but consumers have provided for current requirements and their outlook at factories is not bright enough to warrant buying for stock. Rerollers have bought billets at £4 12s 6d ($22.50) and small steel bars at £5 7s 6d ($26.12) delivered.

Tin plate makers in South Wales are finding it difficult to obtain orders, both at home and abroad. Merchants are selling under the 18s ($4.37) basis in the strong belief that the tin plate conference which meets shortly will lower the price. An important extension of the fruit-canning industry in Britain is foreshadowed by George Cadbury, a director of British Canners Ltd. The company was formed last February to take over the distribution of the products of existing canneries and of further canneries.

British and European Markets Still Depressed

London—(*By Cable*)—The outlook in the British iron and steel industry continues dark, additional plants closing. Foreign inquiries for railroad rolling stock are falling off, and competition from European firms is increasing. A Middlesbrough company has obtained a contract for building a bridge in South Africa. An order has been placed for 20,000 tons of cast iron segments for a London subway. Production of pig iron is being further curtailed. The market in South Wales for tin plate and tin plate bars is easier. A substantial business is being done in galvanized sheets, largely for export.

Domestic trade in France is fair but there is a general feeling of anxiety for the future. A report from Brussels states the Belgian markets are more active, but prices continue downward. Berlin reports domestic and export business slightly improved, though general conditions still are critical.

German Steel Prices Face Drastic Reductions

Berlin—The question of a reduction of top-heavy domestic iron and steel prices now is becoming acute, following the practical discontinuance of the European raw steel association. It is feared that Belgian producers, who are offering merchant bars at about £1 5s ($6.08) less than the price at which German consumers can buy them at home, freight, duty, etc., being taken into consideration, will shortly enter the German market with important quantities. Independent jobbers and merchants may well be in a position to place these tonnages as soon as interest of domestic buyers has somewhat revived. To counteract these developments to a certain extent, the steelworks' association has started

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WATERVLIET AND DUNKIRK, N. Y.
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to grant rebates to various consumers, and it is understood that machine makers in particular receive a fair allowance. Large orders recently placed by railroads with the steelworks' association were awarded only after a rebate of about 7.5 per cent on the official prices was granted by producers. No joint action has been taken by domestic consumers, but it may be that such steps will be decided upon unless producers meet the requests of consumers to a greater extent than at present. In the meantime steelmasters are doing everything possible to reduce costs by taking steps to reduce wages, but so far no final agreement has been reached.

The market still is in bad shape. Stocks of iron and steel at the works have assumed considerable proportions, and there are no chances of their reduction soon unless production is curtailed at a still heavier rate. Although all manufacturers of thin sheets now belong to a special association, the thin-sheet rolling mill, Hausach, of the Wolf Netter and Jacobi combine, has had to be laid idle. The Lubeck Blast Furnace Co., which in 1928 paid a 10 per cent dividend, is expected to reduce its dividend for the past year, owing to the unsatisfactory situation in pig iron.

German stocks of pig iron at the beginning of July amounted to 770,500 tons, compared with 197,600 tons a year previously, thus being equal to one month's production.

British Trend Downward

London—The number of furnaces in operation in Great Britain at the end of July was 105, a net decrease of 28 since the beginning of the month. Production of pig iron in July amounted to 486,100 gross tons, compared with 563,200 tons in June and 671,900 tons in July, 1929. July output of steel ingots and castings totaled 621,400 gross tons against 600,100 tons in June, when operations were affected by holidays, and 804,800 tons a year ago, as follows:

(Gross tons)

Mon. ave.	Act. Fur. on last day	Pig iron	Steel ingots and castings
1913	338(*)	855,000	638,600
1927	149	607,700	758,100
1928	132	550,900	710,400
1929	162	631,600	804,560
1930			
Jan.	159	560,000	771,100
Feb.	162	607,000	776,400
March	157	665,800	826,100
April	151	619,600	696,100
May	141	614,500	692,800
June	133	563,200	600,100
July	105	486,100	621,400

(*) Average for year.

Luxemburg Output Higher

Brussels—There was a slight increase in the output of pig iron and steel in Luxemburg in July. Production of pig iron was 185,043 metric tons, against 178,203 tons in June. The output of steel ingots and castings amounted to 164,889 tons, compared with 150,267 tons in June, comparisons being as follows:

Mon. ave.	Furnaces on last day	Pig iron	Steel ingots and castings
1913	....	212,320	111,355
1927	39	227,710	200,595
1928	38	230,840	214,315
1929	37	242,175	225,605
1930			
Jan.	37	249,875	216,315
Feb.	36	231,326	214,857
March	35	248,983	225,285
April	32	221,209	198,250
May	....	212,168	189,027
June	27	178,203	150,267
July	27	185,043	164,889

British Exports Higher

London—Exports of pig iron and ferroalloys from Great Britain in July amounted to 25,086 gross tons, compared with 21,588 tons in June. Exports of other iron and steel products in July totaled 278,358 tons against 229,381 tons in June. Imports in July amounted to 25,674 tons, and imports of other iron and steel products were 173,114 tons, as follows:

	—IMPORTS—		—EXPORTS—	
Mon. ave.	Pig iron and ferro-alloys	Other iron and steel	Pig iron and ferro-alloys	Other iron and steel
1927	50,715	316,455	27,580	322,100
1928	9,935	231,390	37,895	317,210
1929	12,310	222,410	45,430	319,520
1930				
Jan.	15,770	294,546	40,445	311,401
Feb.	24,252	235,144	26,865	267,422
Mar.	23,186	257,106	39,461	298,253
April	21,254	213,552	30,100	237,895
May	23,039	210,686	32,586	262,143
June	25,031	189,473	21,588	229,381
July	25,674	173,114	25,086	278,358

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, September 29

Export Prices f. o. b. Ship at Port of Dispatch—By Cable

	British Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
PIG IRON	£ s d		£ s d		£ s d		£ s d	
Foundry No. 3, Silicon 2.50-3.00	$15.43	3 3 6*	$12.88	2 13 0	$12.88	2 13 0	$13.37	2 15 0
Basic-bessemer	15.92	3 5 6†	12.88	2 13 0	12.88	2 13 0	13.37	2 15 0
Hematite, Phosphorus 0.02-0.05	17.25	3 11 0	24.76	630*	.....	.....	17.74	3 13 0
SEMIFINISHED STEEL								
Billets	$27.95	5 15 0	$17.74	3 13 0	$17.74	3 13 0	$18.47	3 16 0
Wire rods	41.31	8 10 0	29.16	6 0 0	29.16	6 0 0	29.16	6 0 0
FINISHED STEEL								
Standard rails	$40.10	8 5 0	$31.60	6 10 0	$31.60	6 10 0	$32.08	6 12 0
Merchant bars	1.68c	7 15 0	.94c	4 5 0	.94c	4 5 0	.95c	4 6 0
Structural shapes	1.68c	7 15 0	.86c	3 18 0	.86c	3 18 0	.92c	4 4 0
Plates, ship, bridge and tank	1.79c	8 5 0	1.10c	5 0 0	1.10c	5 0 0	1.19c	5 8 0
Sheets, black, 24 gage	2.17c	10 0 0	1.88c	8 11 3	1.88c	8 11 3	2.31c	10 10 0
Sheets, galvanized, 24 gage, corrugated	2.41c	11 2 6	2.46c	11 3 9	2.46c	11 3 9	3.13c	14 10 0
Bands and strips	2.17c	10 0 0	1.10c	5 0 0	1.10c	5 0 0	1.13c	5 2 6
Plain wire, base	2.06c	9 10 0	1.46c	6 12 6	1.46c	6 12 6	1.43c	6 10 0
Galvanized wire, base	3.04c	14 0 0	1.60c	7 5 0	1.60c	7 5 0	1.62c	7 7 6
Wire nails, base	2.39c	11 0 0	1.32c	6 0 0	1.32c	6 0 0	1.49c	6 15 0
Tin plate, base box 108 pounds	$ 4.13	0 17 0	.....	.....	.....	.....	$ 8.75	1 16 0

*Francs

Domestic Prices at Works or Furnace—Last Reported

		Francs		Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	$15.43 3 3 6	$19.26	490(2)	$16.74	600	$19.77 83
Basic pig iron	15.80 3 5 0	20.63	525(1)	13.11	470	21.08 88.50
Furnace coke	3.16 0 13 0	6.60	168	5.30	190	5.12 21.50
Billets	27.95 5 15 0	22.20	565	18.69	670	27.99 117.50
Standard rails	1.79c 8 5 0	1.46c	810	1.62c	1,245	1.47c 136
Merchant bars	1.68c 7 15 0	1.18c	655	.98c	755	1.48c 137
Shapes	1.84c 8 10 0	1.26c	700	1.07c	825	1.45c 134
Plates, ship, bridge and tank	1.90c 9 0 0‡	1.46c	810	1.25c	960	1.65c 153
Sheets, black, 24 gage	2.28c 10 10 0	2.72c	1,510	2.47c	1,900	1.36c 126
Sheets, galvanized 24 gage, corrugated	2.58c 11 1 6	3.51c	1,950	2.60c	2,000	3.67c 340
Plain wire	2.06c 9 1 0	2.03c	1,125	2.15c	1,650	2.34c 217
Bands and Strips	2.17c 10 0	.26c	700	1.37c	1,050	1.72c 159

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 13s 0d ($3.16) f. o. b. Ferromanganese £19 6s 0d ($93.80) delivered Atlantic seaboard, duty-paid. German ferromanganese £12 5s 0d ($59.54) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel. French, Belgian, Luxemburg, and German are for basic-bessemer steel.

Machinery

SEPTEMBER did not show the marked upswing in equipment buying which some were inspired to predict on account of the late August improvement. Neither did last month belie conservative forecasters who predicted gradual improvement during this fall. Railroads offer mild encouragement in eastern markets. Chicago machine tool market conditions are reported to be static but there is distinct improvement in small tools and dies. The crane and hoist business in Milwaukee is looking up. Gratifying sales response to the exhibition of plant equipment staged in Chicago during National Metal Week is an encouraging sign.

New York—Improvement in machine tool buying and inquiry is spotty. Demand is spread over a broad list of industries, but generally limited to one or two units at a time. Until the automotive, railroad and electrical industries do some real buying, nothing in the way of a pronounced betterment is expected. Railroads are not expected to do much the remainder of the year, beyond feeling out the market, preparing for 1931. Automotive buying is uncertain. The market is largely sustained by scattered buying by the steel and metal working industries. Engineering details are playing an important part in selling.

American Locomotive Co. has closed on more tools, mostly heavy equipment, including a borer with a New England builder. Close to $50,000 worth of equipment has been bought by this company exclusive of the recent list purchased for its Auburn subsidiary. Much of this equipment is reported purchased due to the favorable price situation. The tools are not urgently needed. Todd Shipyard took about $30,000 worth, mostly heavy equipment. Shipyards in the East are active. Westinghouse has closed on a service station list at Newark.

Milwaukee Electric Crane & Hoist Corp. has been awarded three gantry cranes by the Lehigh Valley railroad and has also booked one gantry crane from the New York, New Haven & Hartford railroad.

Worcester, Mass.—The apparent upward trend in the market reported several weeks ago has failed to continue. While inquiry from sources in New England is active, orders are still confined to single machines. Production of grinders, an important branch of the local market, is still dormant awaiting some call from the domestic market.

Pittsburgh—Both orders and inquiry for machine tools were slightly heavier recently. Sellers see little change in the general situation and believe the recent spurt to have been only temporary. A fair volume of pending work gives the future outlook an opportunity for improved sales, dependent however on the general business situation. Railroad inquiry still is light. Orders remain in small individual lots. The crane market is quiet.

Cleveland—September proved to be a distinct disappointment to those who took too literally predictions of improvement in the machine tool business during that month. There was in general, however, a slight improvement, fully as much as was expected by conservative forecasters.

Active inquiry without signs of immediate sales of consequence marks the beginning of October, and there are but few signs of renewed production activity. In fact, reports are current of the putting into effect of some rather drastic retrenchment policies on the part of certain local machine tool builders.

Others are showing considerable activity in engineering development and in sales promotion based upon such developments involving increased production of better work at lower cost.

Chicago—Despite the more stabilized sentiment among many machine tool buyers, inquiries again lagged during the week. Sales also were a little lighter. September for a number of houses will show a distinct improvement over August. Other dealers find the month's orders relatively light. A notable pick-up in tool and die shop business is reported.

The Milwaukee Electric Crane & Hoist Corp., Milwaukee, division of the Harnischfeger Corp., has received an order from the Tennessee Coal, Iron & Railroad Co. for three-ton electric hoists to be used in operating the doors of the new furnaces being built at Birmingham, Ala.

Decline in Crane Orders Occurred in August

New York—Shipments, new orders and unfilled bookings declined in August as compared with the previous month, according to the Electric Overhead Crane institute. Shipments included 80 units with a tonnage capacity of 1589 valued at $728,923. This compares with 90 units shipped in July with a tonnage capacity of 1781½ valued at $1,005,446.35.

New orders dropped to 54 units compared with 70 in July. Such orders had a tonnage capacity of 946 valued at $522,011 compared with 992 tons capacity valued at $601,333 the previous month. On Sept. 1 unfilled orders included 178 units with a tonnage capacity of 4193 valued at $2,526,507.68. On August 1 unfilled orders were 202, tonnage capacity 4776, valued at $2,706,101.68.

Exports of Metalworking Machinery

	August		January through August	
	1930	1929	1930	1929
Engine lathes	47	59	896	578
Turret lathes	17	23	332	348
Other lathes	37	89	522	642
Vertical boring mills and chucking machines	22	13	243	171
Thread-cutting and automatic screw machines	48	89	507	680
Knee and column type milling machines	26	54	250	308
Other milling machines	46	42	561	463
Gear-cutting machines	15	31	304	334
Vertical drilling machines	22	45	378	300
Radial drilling machines	6	9	143	82
Other drilling machines	66	137	1,212	1,510
Planers and shapers	14	47	268	349
Surface grinding machines	8	36	157	180
External cylindrical grinding machines	20	60	426	545
Internal grinding machines	13	33	260	313
Tool grinding, cutter grinding, and universal grinding machines	102	108	1,276	1,045
Pneumatic portable tools	1,405	1,810	13,759	16,944
Chucks for machine tools	1,149	2,956	18,280	15,618

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Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

MERIDEN, CONN.—Storts Welding Co. will expand its facilities on property secured from Edward H. Miller and Manning Bowman Co.

NEW HAVEN, CONN.—Metal Craft Co., recently incorporated by C. K. White, Hamden, Conn., with capital of $50,000, is reported to be planning a plant for the manufacture of metal products.

STORRS, CONN.—Boiler unit at Connecticut Agricultural college recently was damaged by fire.

WATERBURY, CONN. — Waterbury Buckle Co., C. M. Webb manager, 872 South Main street, is receiving bids for a 4-story plant on South Main street. Unit will be 70 x 112 feet. J. DeLauritius, 94 Benedict street, is architect. Estimated cost, $100,000.

BOSTON—City, H. F. Beal superintendent of public works, is receiving bids for pumps and other equipment. Waterworks improvements will cost $50,000.

BOSTON—Bay State Metal Products Corp., recently organized by Olaf M. Johnson, 91 Edwin street, plans to produce metal goods in a local plant.

BOSTON—Boston & Albany railroad, South station, has awarded contracts for machine shop additions and alterations at its Beacon Park yard. C. A. Kirley is chief engineer. Cost is estimated at $50,000.

FALL RIVER, MASS.—Fall River Electric Light Co., R. F. Whitney manager, North Main street, has awarded contract to New England Power Construction Co., 89 Broad street, Boston, for a substation to be built at Fenner and Dwelly streets. Estimated cost, $60,000.

READING, MASS.—Unnamed interest is seeking equipment, including 6 x 16-inch engine lathe, shaper, drill press, bench lathe and collets, milling machine, power press and tools. Can be reached through postoffice box 96.

New York

BROOKLYN — Nash Metalware Co. has been incorporated with $10,000 capital by S. E. Friedrich, 1440 Broadway, New York.

GOWANDA—Gowanda Furnaces have been incorporated with $25,000 capital by W. J. Wilber, to deal in heating apparatus.

NEW YORK—Atlantic Wire Products Co. has been incorporated with $10,000 capital by J. Eisinger, 36 West Forty-fourth street.

NEW YORK—Automotive Fuel Controller has been incorporated with $50,000 capital by Daniel Silberman, 191 Joralemon street, Brooklyn, N. Y.

NEW YORK—Interior Metal Equipment Corp. has been incorporated with 100 common shares by Wickham & Long, 40 West Fortieth street, to deal in sheet metal.

NEW YORK—Supreme Structural Steel has been incorporated with $10,000 capital by C. Furginson Jr., 16 Court street, Brooklyn, N. Y., to make iron and steel.

ROCKAWAY BEACH—Department of hospitals, municipal building, New York, will receive bids until Oct. 25 for a group of hospital buildings to be erected here. A powerhouse is included. M. Bernstein, 1536 Thirty-ninth street, Brooklyn, N. Y., is architect. Cost is estimated at about $400,000.

Pennsylvania

PHILADELPHIA—Hobart Mfg. Co., Troy, O., manufacturer of meat grinders, coffee mills and other products, has leased space at 1334 Spring Garden street for manufacturing and distributing.

PHILADELPHIA—I. T. E. Circuit Breaker Co., Nineteenth and Hamilton streets, has awarded contract to Smith, Hardican Co., 1809 Callowhill street, for construction of a plant addition. Estimated cost, $1000.

PHILADELPHIA—Contract has been awarded to C. C. Eddleman, 1600 Walnut street, for the construction of a boiler house for Philadelphia Country club, at Conshohocken and Monument avenues. Cost is estimated at $11,000.

PHILADELPHIA—E. Sutro & Son Co., East Thompson street, has filed plans for a 1-story power plant to cost about $24,000. Mensing Co., Presser building, is engineer.

PHILADELPHIA—Godshalk Co. has been incorporated with 2250 no par shares by J. H. Connelly, 5031 Newhall street, to manufacture and deal in electrical and mechanical specialties and devices.

PHILIPSBURG—Plant of Lansberry Hardware Co. recently was severely damaged by fire. Loss is estimated at about $200,000.

PITTSBURGH—Bixler Atomized Fuel Corp. has been incorporated with $150,000 capital by Warren Bixler, 218 Lincoln avenue, Bellevue, Pa., to manufacture and deal in atomized coal burning systems and atomized coal.

PITTSBURGH — Reed Electrical Mfg. Co., 237 Fourth avenue, has been incorporated with $10,000 capital by Helene Buechele, 5000 Liberty avenue, to manufacture and deal in electrical and mechanical devices, appliances, and machinery.

New Jersey

EAST ORANGE—A. P. Smith Mfg. Co., manufacturer of valves, water control devices and castings, will build a 1-story addition to be occupied by Eclipse Aviation Corp., East Orange. Latter company manufactures aircraft engines.

PASSAIC—Century Pump Engineering Corp. has been incorporated with 2500 no par shares by Robert H. Davidson, 657 Main street, to deal in electrical machinery.

PLAINFIELD—Sargent Utilities Inc. has been incorporated with $20,000 and 800 common shares by George W. Files, 475 Fifth avenue, New York, to manufacture stoves.

Ohio

AKRON—City council has called for bids on an administration building at the municipal airport, recently noted as planned, in connection with service shops. Unit will be of two stories, and will cost about $175,000. (Noted May 8.)

CINCINNATI — Gulf Refining Co., Frick Annex, Pittsburgh, will install power and mechanical equipment in the oil refining plant it will build in this vicinity. Cost of the entire project is estimated at about $1,000,000.

CINCINNATI — American Blower Corp., Tennessee avenue and Reading road, has awarded contract to John Hoover, 808 Main street, for a one and 2-story plant unit to be built at Paddock road. Russell Potter, 1305 American building, is architect.

CINCINNATI—Dalton Adding Machine Co., 126 East Ninth street, has awarded contract to W. R. Griffin, 5026 Montgomery road, for a plant addition on Beech street, between Highland and Norwood avenues. Cost is estimated at $5000.

COLUMBUS—Buckeye Casket Co., 509 Charles street, has leased a 3-story building at 383 West Spring street, and will expand operations. Company manufactures wood and steel caskets. Henry B. Rardon is president.

MINERVA—J. A. and H. J. Alexander have acquired full ownership of Minerva Vault Co., manufacturer of steel vaults. Company is considering a new plant location in a larger building.

OXFORD—Miami university, A. T.

Connar director of works, has awarded contract to J. Wespiper for construction of a 2-story, 120 x 167-foot laboratory building.

Indiana

ELKHART—H. E. LaBour Foundry Co. plans to build a plant at 1537 Sterling avenue. Plans are private. Cost is estimated at $40,000.

HAMMOND—Hammond Lead Products Co. has awarded contract to F. C. Rowley, 611 Hohman street, for a plant at 1200 Standard avenue. Cost is estimated at $100,000.

HAMMOND—W. J. Holliday & Co. Inc., manufacturer of steel structural shapes, Indianapolis, Ind., plans to build a plant here on a site purchased from Illinois Car & Mfg. Co. Cost is estimated at $400,000.

INDIANAPOLIS — Stolte Stoker Corp. has been incorporated with 5000 no par shares by Frederick A. Stolte, 4150 Ruckle street, to manufacture and deal in stokers, furnaces and other heating devices.

Michigan

DEARBORN—U. S. Tool & Mfg. Co., Kingsley avenue, has been incorporated with 15,000 no par shares by Simon F. Wall, to deal in machine tools, machines and machinery.

DETROIT—Leland Detroit Mfg. Co., 5945 Martin avenue, is inquiring for drill, spindle and tapper.

DETROIT—Detroit Edison Co., 2000 Second street, will build a power plant addition. Work will include the installation of six steam turbine generators and 14 boilers. F. A. Compton is in charge of plans.

DETROIT—Bird Aircraft Corp., formerly Brunner-Winkle Aircraft Corp., Brooklyn, N. Y., has been acquired by Detroit interests and will establish a plant in this area, with a production of 200 planes per year. Thomas G. Lanphier is president. Frank W. Brooks Jr., 314 Ford building, is a member of the board of directors.

MENOMINEE—Thomas Arsneau has opened an office in the Richards hotel and is promoting the formation of a company for the manufacture of a patented lock, of which he is the inventor. Product would be manufactured here.

WYANDOTTE—City will erect a power house on Van Alstyne boulevard at a cost of approximately $300,000. Froelich & Emery, engineers, Toledo, O., are preparing plans, which will be completed about Nov. 1.

Illinois

BELLEVILLE—Oakland Foundry Co. and its subsidiary, Quality Stove & Range Co., have abandoned plans for acquiring the local plant of the National Carbon Works, and propose to build a new plant on East A street. Unit will be 225 x 300 feet, and will replace the $500,000 plant recently destroyed by fire. Henry Ehret is president and Hugo Ehret vice president and general manager of the Oakland company. (Noted Sept. 18.)

CHICAGO—Ellsworth Mfg. Co., 431 South Wabash avenue, has been incorporated with 1000 no par shares by Dickinson, Smith, Farrell & Wham, 231 South LaSalle street, to deal in radios, telephones and telegraph systems.

CHICAGO — Cameron Surgical Specialty Co., 666 West Division street, has been incorporated with 100,000 no par shares by Olive J. Chambers, 160 North LaSalle street, to deal in surgical instruments.

CHICAGO—Perfection Valve Corp., room 1311, 228 North LaSalle street, has been incorporated with $6000 capital by Sanders, Child, Bobb & Westcott, 231 South LaSalle street, to deal in valves.

CHICAGO — International Metal Products Co., 33 North LaSalle street, room 2200, has been incorporated with $20,000 capital by Frank L. Paul, 4421 North Richmond street, to deal in metal products.

CHICAGO — Continental Airways Inc., 5032 West Sixty-fourth street, will build a hangar, 85 x 160 feet, and is reported to be in the market for repair shop equipment. Olsen & Urbain, 228 North LaSalle street, are architects.

CHICAGO—Koro Corp., Waukegan, Ill., manufacturer of welding rods and wire, has awarded contract to Holton, Seelye & Co., 140 South Dearborn street, Chicago, for a 1-story plant unit, 75 x 200 feet, at 3021 West Madison street. Approximate cost, $50,000. Company will remove its plant operations to Chicago upon completion of the plant.

DEKALB—Nehring Electrical Works, manufacturer of insulated wire and cables, is building a new plant unit for wire drawing.

LIBERTYVILLE — Nimrod Co. is building a plant for the manufacture of hunting goods. Approximate cost, $60,000.

MILLSTADT—Commercial Club, board of directors, is negotiating with individuals who plan to organize a company to establish a foundry here. Club plans to finance plant construction. Company being organized would employ about fifteen men for initial operations.

SPRINGFIELD — Hummer Plow Works is reported to be in the market for a 24-inch sander, with power feed and single oscillating drum.

Missouri

KANSAS CITY — Master Automatic Oil Burner Co. has been incorporated with $15,000 capital by Louis H. Borserine, 3809 Benton boulevard.

MOUNTAIN GROVE—City plans to improve the waterworks system and purchase pumps. Estimated cost, $20,000.

SIKESTON—City, N. E. Fuchs mayor, will build a municipal light and power plant. W. A. Fuller Engineering Co., 2916 Shenandoah avenue, St. Louis, is engineer. Bond issue of $150,000 is available.

ST. LOUIS—Phillips Petroleum Co., F. W. Cordell district manager, is building a 2-story warehouse, garage and shop building.

Arkansas

HARTMAN — School board has let contract for a vocational building, to include shop, to J. R. Blythe, Mulberry, Ark.

LITTLE ROCK—City plans to add about 210 acres to present flying field and improve airport. Expenditure may total $200,000.

Oklahoma

HOMINY—City, A. Blackburn clerk, has preliminary plans for the construction of a light and power plant. Estimated cost, $50,000.

OKLAHOMA CITY—City council has approved plans of Charles B. Russell, engineer, for construction at the municipal airport. Purchase of 640 acres southwest of the present field will augment landing area.

Texas

DALLAS—Huey & Phillip Hardware Co., 1029 Elm street, plans to build a warehouse at 1802 Griffin street. Cost is estimated at about $25,000.

DENISON — Dallas Aviation school, Love Field, Dallas, Tex., will establish operations at Gray airport here.

EAGLE PASS — Maverick county council has selected a site for a new airport, to be developed near here.

FT. WORTH—P. M. Devitt, 3816 Tulsa street, will erect a plant unit at a cost of about $13,000 at 815 Lamar street, to be leased to General Electric Co.

FT. WORTH—Texas & Pacific railroad is reported to be planning a freight terminal which will cost $1,600,000. Mechanical and electrical equipment will be required.

HOUSTON—Diamond Electrical Mfg. Co. of Texas, 1517 Fannin street, W. F. Wilson president, will increase facilities in order to double production.

SAN ANTONIO—Cleveland Tractor Co., Cleveland, plans to build a warehouse on a site recently acquired here

on South Cherry street. Present location is 1113 West Houston street.

Wisconsin

MADISON—Holabird & Root, architects, 333 North Michigan avenue, Chicago, expect to have plans for the proposed $900,000 addition to the United States forest products laboratory at the University of Wisconsin here, completed in time that bids may be taken Nov. 15.

NEENAH—J. W. Hewitt Machine Co., 131 North Commercial street, has awarded contracts for a 1-story shop addition, 40 x 148 feet. Besides machine tools, a traveling crane will be required. John W. Hewitt is president and general manager.

WITTENBERG — The snow fence manufacturing plant of the Wheeler-Arnold Co. was destroyed by fire Sept. 23, with a loss of $25,000. It will be replaced at once.

Minnesota

BLOOMING PRAIRIE—Council plans construction of a municipal light and power plant, maturity indefinite.

COLERAINE—Cleveland Cliffs Mining Co. has awarded contract for preliminary construction work to E. W. Coons Co., Hibbing, Minn., for a 100 x 200-foot orewashing plant. Cost is estimated at $200,000.

DULUTH—Minnesota Power & Light Co. will build a steam-operated power plant at a cost of $350,000.

South Dakota

YANKTON — Northwestern Public Service Co. will build a power plant addition here at a cost of about $100,000. Work starts immediately on construction.

Iowa

FT. DODGE—Fort Dodge Gas & Electric Co. plans extensions and improvements in its power plants and system, to cost $500,000.

IOWA FALLS—Central States Electric Co., now completing a boiler plant unit at a cost of $150,000, plans to install equipment in the future to expand plant production 5000 kilowatts. Development will cost $250,000, and will be completed by next spring.

Kansas

LEAVENWORTH—St. Mary's Academy advises that equipment needs for the boiler house recently noted as planned, will include stokers and ash carriers. (Noted Aug. 11.)

Montana

POLSON—Phoenix Utilities Co. is constructing a machine shop, transformer building and other structures at its power site on the Flathead river near here.

Idaho

NAMPA—Pacific Fruit Express Co., 64 Pine street, San Francisco, subsidiary of the Southern Pacific railroad, plans to build a boiler plant addition here.

WALLACE — Jack White Mining Co. plans expansion program at its mills, calling for an outlay of about $300,000.

Arizona

KINGMAN—Kingman Refining & Smelting Corp. has been incorporated with $1,000,000 capital by W. R. Little, 1614 South Flower street, Los Angeles. It is reported that the company will erect a custom smelter.

Southern States

MOBILE, ALA.—Standard Oil Co. of Louisiana Inc., 2134 St. Charles avenue, New Orleans, will install power and mechanical equipment in the plant it is to build here. Cost of the entire project is estimated at $350,000.

WASHINGTON—Secretary of the interior will receive bids until Oct. 15 for equipment for St. Elizabeth's hospital, including boiler, superheater, economizer and stoker.

CLERMONT, FLA. — Engineers of American Can Co., New York Central building, New York, are reported to be seeking sites here for a plant for the manufacture of canning plant machinery.

ST. PETERSBURG, FLA.—St. Petersburg Match Co. has been incorporated with $20,000 capital by S. M. Friede and S. A. Curry, to manufacture patented safety matches in a plant to be operated within about three months. Company will eventually manufacture match machines and machines for making box matches.

WEST PALM BEACH, FLA.—City and Roosevelt Flying Corp. have arranged to develop an airport on Belvidere road. City will construct hangar units.

ATLANTA, GA.—Gulf Coast Airways Inc. plans to build a hangar addition at Candler field. Unit will be 80 x 110 feet.

BLUE RIDGE, GA.—Toccoa Electric Power Co., operated by the Tennessee Electric Power Co., Chattanooga, Tenn., will build a 2-story power plant here at a cost of about $85,000.

SOMERSET, KY.—Guffey & Dew Mfg. Co. is a new firm here, producing metal flower stands and other metal products.

NEW ORLEANS—Board of commissioners of the Port of New Orleans is considering the development of an airport. Estimated cost, $1,000,000.

NEW ORLEANS—Chief engineer, Inland Waterways Corp., 320 Magazine street, will receive bids until Oct. 10 for two water-tube boilers for a river towboat.

CHARLOTTE, N. C.—Weeks Aircraft Corp., W. J. Sauerborn vice president and general manager, 999 Third street, Milwaukee, will lease Charlotte airport and erect a 80 x 100-foot unit for school building and shops.

ELIZABETH CITY, N. C.—Chamber of commerce, D. D. Saunders secretary, plans a new municipal airport. Site of 32 acres has been selected.

MEMPHIS, TENN.—V. F. Proussard, airways-radio division, department of commerce, Washington, will receive bids for a $40,000 radio station to be erected near here.

CLIFTON FORGE, VA. — Clifton Forge Machine & Foundry Co. Inc. has been incorporated with $100,000 capital by B. C. Goodwin.

WAYNESBORO, VA.—B. H. Clemmer, local agent for Edison Electric Appliance Corp., 22 West Fifteenth street, New York, is reported to be arranging for operation of the plant of W. J. Loth Stove Co.

CLARKSBURG, W. VA.—Monongahela-West Penn Public Service Co. has filed plans for a substation. Cost is estimated at $50,000.

HUNTINGTON, W. VA.—West Virginia Rail Co., H. A. Zeller vice president, will build a new mill unit, main portion of which is to be 100 x 609 feet. Bays 80 x 370 feet, 60 x 160 feet, and two bays 80 x 250 feet will be included. Overhead cranes are to be installed. Total expenditure, approximately $250,000. Work starts immediately.

McCOMAS, W. VA.—Coal cleaning plant and washer of the American Coal Co. of Alleghany County Inc. recently was destroyed by fire. Loss is estimated at $200,000.

Pacific Coast

ALAMEDA, CALIF.—Army engineers are reported to be drawing plans for an army air base, to be developed here. Actual construction will not take place before Jan. 1. Total expenditure may amount to $5,000,000.

IONE, CALIF.—Preston state school of industry recently closed bids for the construction of a 1-story shop building. State department of public works, division of architecture, Public Works building, Sacramento, Calif., has plans.

LOS ANGELES—Baker Oil Tools Inc., 2959 East Slauson street, plans a new plant unit. Approximate cost, $150,000.

LOS ANGELES—Fernholtz Machinery Co., 2053 East Thirty-eighth street, will build the first of a series of plants here for Goldfields Consolidated Mines Exploration Co.

OAKLAND, CALIF.—Herrick Iron Works, Eighteenth and Campbell streets, advises through S. S. Herrick, manager, that the company recently purchased a lot 165 x 231 feet adjoining its present site, and is planning to extend its plant. Nearby lots

have been purchased for an equipment yard and for a new office and drafting room. Completion of the building program will increase the capacity of the fabricating shop to about 2000 tons per month. (Noted Sept. 18.)

SAN FRANCISCO—Board of supervisors has placed on November ballot the proposal for a bond issue of $4,000,000 for developments at Mills field municipal airport.

SAN FRANCISCO—General Petroleum Corp. of California, 310 Sansome street, plans to build an oil storage and distributing plant in the North Beach district at a cost of $750,000. A boiler house, pumps, and mechanical equipment will be included in the plans.

SAN FRANCISCO—American Telephone & Telegraph Co., 195 Broadway, New York, and Bell Laboratories are reported to be investigating sites near here for a short wave radio telephone station for service with Hawaii. Expenditure for proposed station would total about $1,000,000.

BELLINGHAM, WASH.—Damage done by fire in the plant of J. M. Laube & Son Sheet Metal Works and Willard Battery shop, 1210 State street, will be repaired at once.

CAMAS, Wash.—Camas Machine Shop, Charles Gfeller manager, Sixth and Clare streets, is building a new shop.

FORKS, WASH.—Grays Harbor Power & Light Co. has purchased Forks Electric Co. and will install additional power and generator equipment.

PORT ORCHARD, WASH.—South Kitsap Union High School district will erect a 40 x 80-foot machine and automotive shop. Plans are being prepared by F. B. Stephens, architect, Seattle.

SEATTLE—Ford Motor Co., Fordson, Mich., is in the market for crane, conveyors and mechanical equipment for its new assembly plant here.

SEATTLE—Pacific Telephone & Telegraph Co. will lease a shop now being built by James B. Stilwell & Co., at 3220 Ninth street. Cost is estimated at about $25,000.

SEATTLE—Anderson Bros. Machine & Iron Works Inc. has been formed by Emil W. Anderson and associates, 1208 Alaska building, with capital of $15,000. Company will manufacture and repair machinery.

Dominion of Canada

EDMONTON, ALTA.—Minneapolis Moline Power Implement Co. is having plans prepared for a warehouse costing $40,000, on 109th street, between Jasper and 100th avenues. Unit will be 1-story, 85 x 110 feet.

WINNIPEG, MAN.—Inter-Provincial Distributors Ltd. has been incorporated with $100,000 capital by Ralph J. Purdy and Donald H. Leitch, to manufacture and deal in electrical, automotive and radio machinery and appliances.

HALIFAX, N. S.—School board has appointed a committee, headed by W. P. Buckley, to plan a proposed vocational school. Cost is estimated at about $600,000.

HAMILTON, ONT.—City, W. L. McFaul engineer, city hall, is drawing plans for machine and repair shops on Elgin street. Cost is estimated at $70,000, with equipment.

PRESTON, ONT.—Clare Bros. & Co., manufacturers of stoves, are reported to be considering a plant addition.

SUDBURY, ONT.—High School board has awarded contract to Cox Construction Co. Ltd., 46 King street west, Toronto, Ont., for an addition to Sudbury Mining and Technical school.

TORONTO, ONT.—University of Toronto, A. D. Lepan building superintendent, has started construction of additions and extensions to the mining building. Cost is estimated at $200,000.

TORONTO, ONT,—Property committee of board of education has authorized C. E. Dyson, chief architect, to prepare plans for a 4-story supply, workshop and garage building.

WINDSOR, ONT.—Canadian Battery & Bonalite Co. Ltd. has been incorporated with $250,000 capital by A. E. Swanson, 1518 Buhl building, Detroit, to manufacture and deal in truck chassis, parts and accessories.

WINDSOR, ONT.—Border Motor Car Co. Ltd. has been incorporated with $40,000 capital by Robert E. King, 609 Mill street, to manufacture and deal in merchandise.

MONTREAL, QUE.—Montreal Tramway Co. has awarded contract to I. J. MacGregor Ltd., 720 Castle building, for a 47 x 60-foot substation on Queen Mary road. Approximate cost, $33,000.

MONTREAL, QUE.—Canadian Junkers Ltd. has been incorporated with $50,000 capital by A. S. Bruneau, 275 St. James street west, to deal in aircraft, motors and engines.

MONTREAL, QUE.—Crane Ltd., 1170 Beaver Hall square, has let general contract to United Engineers & Contractors Ltd., 1010 St. Catherine street west, for the erection of a 1-story, 130 x 330-foot addition to its foundry at 1280 St. Patrick street. Company manufactures steam fitters' supplies.

ROUYN, QUE.—Noranda Mines, near here, have awarded contract to Disher Steel Construction Co., 80 Commissioner street, Toronto, Ont., for a smelter addition.

New Trade Publications

BENDING MACHINES — Wallace Supplies Mfg. Co., Chicago, has issued a catalog of its hand and power bending machines for a variety of purposes. It is well illustrated.

BILLET SHEARS — Shears for heavy duty cutting of billets and bars are described in a catalog by Henry Pels & Co. Inc., New York. Illustrations show the shears and details of construction, and tables of capacities and specifications are included.

MATERIAL HANDLING EQUIPMENT—A folder by the Truscon Steel Co., pressed steel division, Cleveland, calls attention to savings made possible in materials handling by use of the company's allsteel boxes, skid platforms and factory trucks.

UNIT HEATER—Buffalo Forge Co., Buffalo, N. Y., features in a current bulletin a new model of its unit heaters, containing various improvements recently developed. Illustrations, diagrams and specification tables complete the presentation.

ROTARY COMPRESSORS — Yeomans Bros. Co., Chicago, has issued a catalog on its rotary compressors and dry vacuum pumps, with illustrations, cross sections and tables of data. Various advantages of this type of compressor are indicated and a wide variety of uses is listed.

TRAMRAIL — Value of tramrail equipment in handling materials and parts in the automotive industry is the subject of a bulletin by the Cleveland Electric Tramrail division of the Cleveland Crane & Engineering Co., Wickliffe, O. Application of its equipment to various uses is illustrated.

CHAIN—Silent and roller chain manufactured by the Union Chain & Mfg. Co., Sandusky, O., is described in a catalog just issued. Data on these types of chain are supplemented by engineering tables of value to chain users. It also contains data on sprockets and on chain attachments for special purposes.

NICKEL ALLOY STEEL FORGINGS—A technical bulletin has been issued by the International Nickel Co. Inc., New York, containing a reprint of a paper presented before the American Society for Steel Treating by Charles McKnight of its development and research department. It deals with the manufacture, uses, analyses, heat treatment and properties of nickel alloy steel forgings over four inches in diameter or the equivalent. Tables, charts and illustrations are included.